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Address.

LEONARDO DA VINCI'S SCIENTIFIC RESEARCH, WITH PARTICULAR REFERENCE TO HIS INVESTIGATIONS OF THE VASCULAR SYSTEM.*

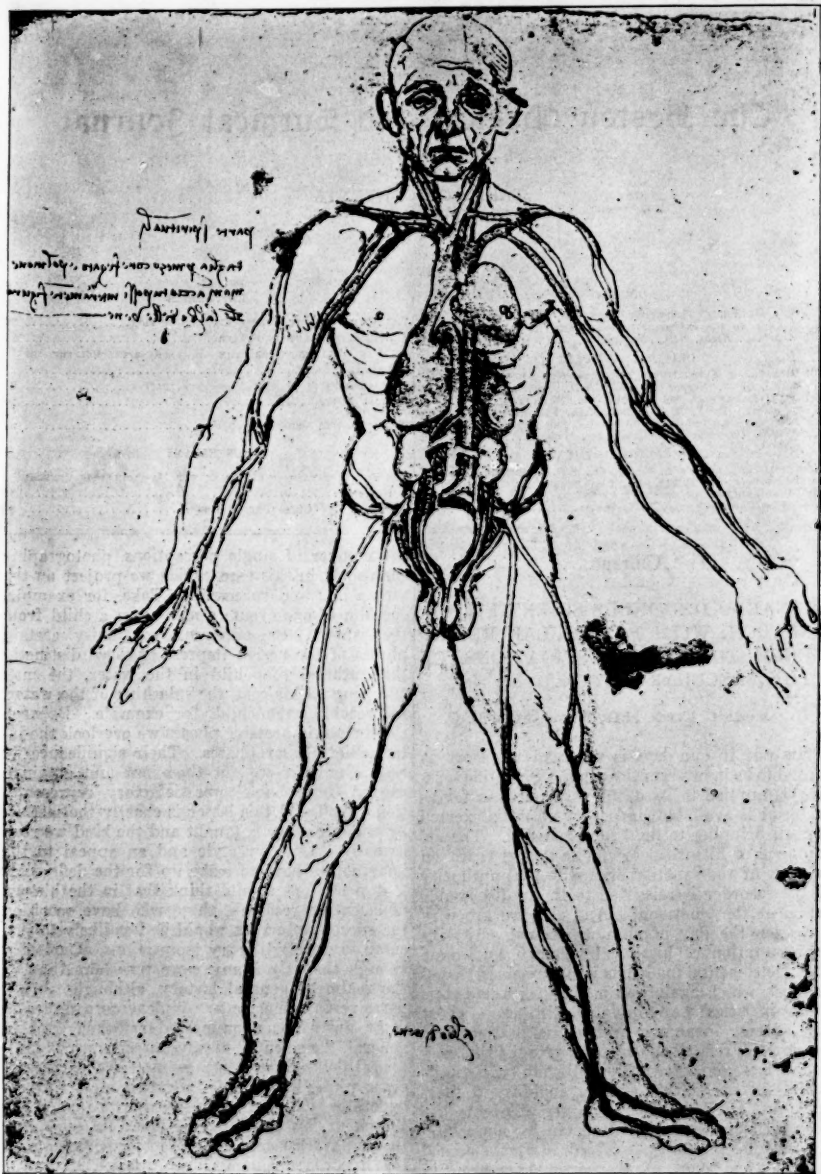
By ARNOLD C. KLEBS, M.D., WASHINGTON, D. C.

HISTORY in our days is not read any more as it used to be in less skeptical ages. Scientific scrutiny is applied to its component parts as far as material is available, and every effort is exerted toward bringing to light new material. The acceptance of historical events as gospel truth on account of the sanctity or intellectual authority of the recorder is relegated to the undiscoverable realm of the emotional. And still we are very far from the day of an unemotional, objective representation of historical values. An innate obstacle, a mental inadequacy in ourselves, seems to exist, which again and again makes us revert to an uncritical worship of our old heroes, great discoverers, inspiring events, no matter how much cold reflexion, or contrary scientific evidence has done toward modifying the traditional picture. This evident inability to perceive and conceive the continuity of events has been well epitomized by Bergson by comparing the mental processes involved to the chemical and physical ones of the cinematograph. By means of this much perfected modern instrument we can increase the illusion of reality with

* Paper read before the Harvard Medical Historical Club, February 1, 1916.

the number of single perceptions, photographic snap-shots in this case, which we project on the screen in rapid succession. Take, for example, the film of one event; a man saves a child from the water. In apparent continuity certain phases of the action impress us more distinctly than others: the child in the water, the man throwing off his coat, the splashing of the water, his reaching the child, for example. Between these main impressive phases we overlook the intermediate lesser phases. Their significance we realize only if we cut them out and obtain a ragged, improbable, unsatisfactory representation. And still this latter is exactly the method by which history is taught and the kind we read casually. Literary style and an appeal to the imagination have to make up for the deficiency.

A priori one should think that in the history of scientific research, those who have recorded the successive events would be less likely to succumb to purely literary temptations. Curiously enough this is not any more true here than in the realm of general history, although we can perceive in some modern endeavors a desire to draw away from unsupported tradition. But in general, the scientist also, when entering the historical field adheres to persons, episodes, discoveries, whose importance he almost inevitably exaggerates. Very often this tends to falsify our judgment, by elevating the epoch in which we live and work into a position of perfection out of the line of continuous evolution. It is worth while to practise from time to time a little introspection as regards the validity of our stock of traditions. While we are apt to look with scorn upon the dogmas, religious and others, which



'L'albo delle vene.' This (schematic) drawing of Leonardo's bears an interesting resemblance to the phlebotomy figures in Keiham's *Fasciculus medicinae*, Venice, 1491, and later. (From Leonard de Vinci: *Notes et Dessins*, Paris, 1901.)

constituted the cherished inheritance of our forebears, we are blind to the fact that many of the theories upon which rests the edifice of modern science may appear to those that will follow us in no other aspect than that of dogmas. Historical writing as a form of literature for our recreation and elevation over the drudgery of daily routine has surely its place, but scientific history has different aims. Without bias and prejudice it analyzes individuals and their work on the basis of records, whatever their source may be, and it attempts synthesis only tentatively, ever subject to modification with increasing information.

But I am to speak to you tonight about Leonardo da Vinci, around whose person and work legend began to spin its miraculous network already in his lifetime, so much so that he would seem the most unlikely contributor to scientific history, especially as he has never published a work on any subject by which his knowledge and accomplishment may be measured by conventional standards. And still the few authentic canvases and, what interests us especially here, his manuscript notes and sketches, have from the very first astonished and delighted every beholder. While the general admiration of him as an artist persists, the appreciation of his scientific work is on the increase steadily. All sorts of eulogistic titles have been heaped upon him, the universality of his genius being most widely recognized. Of particular interest to us is the fact that he has been called the founder of modern anatomy, the initiator of anatomical illustration, and in pursuance of the irresistible tendency to classify and pigeonhole, he has been named the precursor and model for Vesalius, the anticipator of scores of anatomical and physiological discoverers. All these claims on his behalf have, of course, found equally warm opposition, and so Leonardo is on a good way to become one of the fixed stars in the firmament of medical history. In the mathematical and physical sciences he was first taken seriously, then gradually it was recognized that his observations in the field of natural sciences, notably in geology and botany, deserved attentive study. But longest, scientific recognition was withheld from his studies in anatomy and physiology, and that has its explanation in the natural presumption that he, the most eminent artist of the late quattrocento, the creator of that bewitching portrait of the eternal feminine, the *Mona Lisa*, master in the representation of the animated figure in detail and composition, as in the *cenacolo* at Milan, most probably had perfected his art by a minute study of the anatomy of the body, as was the general tendency of his age. Such study could only, one presumed, have furthered a more minute understanding of external anatomy and possibly of the mechanics of bodily motion and attitude. On account of this natural prejudice the extensive and scholarly analysis of his manuscripts by J. P. Richter (London, 1883)

called forth only isolated attention among anatomists and physiologists. It needed something more emphatic, and one has to admit it—regretfully, something more sensational to attract attention to the intrinsic scientific value of Leonardo's work. It came about not through a lucid representation of Leonardo's contributions, but through a bold accusation of plagiarism, hurled against the accepted founder of modern anatomy, the great Vesalius, a plagiarism alleged to have been practised by him at the expense of Leonardo (Jackschath, 1902). The glove was thrown into the ring and at once



This sketch, better perhaps than any other, shows Leonardo's mastery in anatomical observation, artistic and plastic rendering, and technic of dissection. Very likely he injected the blood-vessels with wax or some other hardening substance. (From Notes at Dessins, Paris, 1901.)

eagerly snatched up by the defenders of the attacked idol. The battle is still on, although the one who stirred it up has been silent since its inception and the greatest defender of Vesalius' reputation (Roth) has been called to rest. It has reached the stage of trench warfare fought with the most perfected scientific weapons, and we neutrals are reaping the benefit in the form of a vastly increasing knowledge about both Vesalius and Leonardo.

It cannot be my intention, from what I have said before, to take part in the contest, or, as you may judge from the title of this paper, to pose as a protagonist of Leonardo's cause. I have tried to acquaint myself with all the available manuscripts, of which the most important collections are in Milan, Paris and London (now published practically in their totality in excellent facsimiles, with transcription and translations) and from the insight thus obtained, superficial as it may be, I have received certain general impressions.

Leonardo's lifetime—1452 to 1519—coincides with the acme of the Italian renaissance, that epoch during which what appears to us now as the senile mediaeval intellect, had rejuvenated itself in the ardent contemplation of antique works and models. On the development of art Leonardo's influence in that epoch is admittedly paramount. Art critics are, perhaps, more easily satisfied than scientific ones, for also in art Leonardo's actual legacy is not abundant. The difficulty for the scientific critic is that he has to depend so much on the criterion of the written and published work. He cannot trace historically the influence of one man or school through long periods by a visual analysis of such subtle features as technic, mannerism, drawing, composition, or modelling in the work before him. And still the critic or historian of artistic and scientific work have this in common, that their respective objects of study, while differing in the mode of expression, aim both at the representation of the truth. But "there are two kinds of truth," as Froude says in his "Origen and Celsus": there is the general truth, the truth of the idea, which forms the truth of poetry, there is the literal truth of fact, which is the truth of science and history. But when he adds: "They correspond to opposite tendencies in human nature, and never as yet have been found to thrive together"; while admitting the correctness of the inference in general, medicine, being both an art and science, escapes, in part at least, from the odium of such generalization. The artist with an eye trained by long practice and experience to observe the slightest deviations in outline, form and color, and a hand to render with utmost accuracy not only the object before the eye, but also the impressions retained by virtue of an often tested visual memory can, if his interests lie in this direction, render the greatest assistance in a scientific inquiry. Leonardo, who did possess these qualifications to a superlative degree, not only had the interest of

the "dilettante" or the humanistic scholar, striving for universal erudition after the fashion of his day, but a passion for knowledge. At least so he appears to us as we follow his train of thought in his notes. Ever and ever he seems urged on by irresistible curiosity to ask himself questions about anything and everything that comes into his path. His notes were not written, his sketches not drawn for publication. Whatever his own ultimate designs in this respect may have been, nothing so far has appeared from his hand which bears the mark of a manuscript intended for the press. All theories in this regard are without foundation.*

This granted, and in the absence of any comprehensive and completed statement of his knowledge, how are we to apprehend and judge Leonardo's contribution to our science? Are we to consider him merely as an interesting phenomenon devoid of any or only negligible historic significance? Or may we perhaps, hope that further research may show his direct influence on the discoveries that grace the records of scientific history? If this history once is simply written, in Osler's sense, as the biography of the mind of men, one might be hopeful that Leonardo's work would find a place; meanwhile in the juxtaposition of individual biographies now called history of science, there is no definite place for Leonardo. And still in a sense this enhances his true value, not only because of his remarkable intellectual endowment or his artistic pre-eminence, which speak out of every page of his notebooks, but because, paradoxical as it may sound, for the fact that such methods as he employed in his search, such conclusions, which they allowed him to reach, could have, and evidently did, remain hidden for more than two hundred years. Had his notes and sketches just as they were, say in 1512, been put in order and published, that book would have a very definite place in the historical annals. Does the only fact that none has appeared diminish the greatness of the mind that produced the notes, and are we entirely forgetful of the fact that mind has always bespoken mind, even before the invention of the printing press, and presumably also after and without its intervention? Surely not. Thus we see incorporated in Leonardo merely that kind of intellectual force which has asserted itself in ways difficult, sometimes impossible, to trace; a force which exists in every thinker, whether in science or in other fields, and of all ages in varying degrees. From Leonardo's notes one is allowed to learn what he has to say almost as if one were hearing his own words, watching his objects with him and his delineation of their various aspects. He expresses himself not in the obscure latinity of scientific jargon, but in the vernacular, most fa-

* In the collection of the Uffizi at Florence, Sudhoff discovered a drawing of skeletons which he attributes to Leonardo. It is a loose leaf, which to judge by certain marks and outside appearance, may have formed the cover of a collection of anatomic sketches put together for reproduction by the wood-cutter. This single sheet, even if it can be proven to be by Leonardo, is evidently no conclusive evidence in the inquiry.

miliar to him, without any consciousness of having to address anybody, spontaneous, brief mental notes, when he cannot make his sketches speak, his preferred method. He does not argue and quarrel with scientific antagonists to show his own importance, but often he does introduce by the words, "the opponent says," possible objections to his own propositions. He does not tell us any harrowing tales of his going out in the dark night to cut the body of a criminal from the gibbet, nor does he seem to have hidden putrefying extremities in his bed chamber. His interest, however, in dissection and his skill in it are apparent to anyone who will study his sketches. Opportunity for dissection in his time was much more frequent than is usually assumed. In Milan, the chief centre of his anatomical work, at the Ospedale Maggiore and the Accademia dei Fisioci he could find all the material needed. He never complains of lacking material (save once when at Rome he was not allowed bodies for the purpose); the only thing he was always in need of was—time, which is easy to understand, considering the demands made upon him by the Ducal Court and his many other occupations.

But while his sketches are speaking witnesses for Leonardo's full understanding of the immeasurable advantage of direct observation and experiment over that derived by mere book study, it is evident that he also consulted the authorities the same as any intelligent searcher after truth must do. The paralyzing effect of book study and the worship of authority in those days is too often exaggerated. It existed then as it exists now, and it is sometimes worth while if we remember that we also swear by Darwin, Pasteur, Koch, Ehrlich as they did by Aristotle, Galen and Mondini, for instance. In all times there are those who by reading will come under the ban of authority, while to others thought, in whatever expression encountered, will beget thought. Leonardo's epoch is often represented as that of the dawn of sober thought after a night of distempered dreams. It is not so: his span of life and perhaps the few following decades mark the apogee of a cultural period, the roots of which reach into the twelfth and thirteenth Century; and after it a rapid decline took place. During that period there had been a good deal of literary activity, original to some extent, but consisting especially in translations of Greek and Arabic texts, which familiarized the student more and more with classical works in a purer form. When we reconstruct the library of Leonardo at the hands of the authorities which he occasionally mentions, we find that their works were available in his days in excellent printed editions. Aristotle he could consult in two good Latin editions (1479 and 1496) and the monumental Greek Aldine. The *editio princeps* of Galen was available to him in a superb volume from 1490 on. Out of it spoke to him not only the voice of that great encyclopaedist of medicine, but also the experimenter,

and not least of all the wisdom of the Alexandrian school, which linked Galen directly to Hippocrates. There is no doubt that Galen gave many a hint to Leonardo, but to a man with critical acumen the question of Galen's infallibility did not even occur. Galen's anatomy and physiology, based on direct research, in human as well as in animal bodies, by dissection and vivisection, could not be ignored by Leonardo, especially since it contained some of the thoughts of Galen's greater teachers, whose words were lost. Aristotle, Protagoras, Herophilus, Erasistratus thus came to Leonardo through Galen's intermediary, just as he probably reached Avicenna, and the other Arabic interpreters of Greek thought through Mondini's little manual. Of contemporaneous literature he mentions only the anatomy of Alessandro Benedetti, as a memorandum, it may be presumed, to acquire the book, for a perusal of it would have taught him precious little. One work, however, not contemporary, but already a good deal more than a hundred years old, was available to Leonardo in several printed editions, Guy de Chauliac's "*Chirurgia*"; its first book on Anatomy might have struck a very sympathetic note. He might have read there the following significant sentence*: "Anatomical investigation has to proceed in two ways, by book study and by direct observation; the former is surely useful but not as sufficient as the latter to explain clearly what can be apprehended only through the senses," and when further along Guy also speaks of the value of anatomical illustrations, a method which he says, already his master, Henri de Mondeville, had successfully employed in teaching, Leonardo would certainly have approved.†

But we will now examine Leonardo's method of investigation as it appears in his notebooks. As we turn the folio leaves and study carefully his sketches and the notes in mirror writing (they with a little practice become fairly easily legible) we will at once recognize certain general features which will dissuade some school anatomists from proceeding any further unless they have acquired the habit of historical open-mindedness. If they have not, they will note with painful concern the entire absence of any systematic arrangement in Leonardo's anatomy, the few descriptive notes do not sufficiently enter into the totality of observable details, and they hopelessly mix up anatomic with physiologic considerations, employing a perfectly inadequate nomenclature. The organs dissected, drawn and described are not always from human subjects, so that human and animal anatomy might again become confused, as through

* "*Anatomia inquiritur dupliciter, uno modo per librorum doctrinas, quis modus licet sit utilis, non est tamen sufficiens ad enarrandum ea qua solum sensibus cognoscuntur.*"

† Leonardo mentions once the name "Guidone," which may or may not refer to Guy de Chauliac. The anatomy of Alessandro Benedetti is noted on one of the rare dated sheets; the date is 1508, in which year two editions of the work would have been available, other authors mentioned are: Hippocrates, Celsus, and Cibalino.

Galen. There is truth in these objections, but their validity fails when we remember that we have only notes before us, made as circumstances and available material permitted observation, sort of laboratory memoranda during years of study, later mixed up during the vicissitudes which befell them after they left Leonardo's keeping. We have to put them again into their logical order, for they naturally mark stages of growing enlightenment. Without entering here into his method of delineation, it must be said that he draws simply and clearly the objects before him without any embellishments. On his pages we encounter no tired-looking muscle-man, who with detached pendulous muscles, leans against the ruins of an ancient temple; no charming nude lady reclining upon soft pillows of a gorgeous lounge, contemplating wistfully her own uterus in the opened abdomen, pictures as we see them in a hundred anatomical works from Vesalius' "Fabrica" into the Nineteenth Century, pictures which certainly do not contain art to please nor anatomy to teach.

Among the great number of sheets it may be interesting to select only a few of those dealing with internal organs, which surely do not concern themselves with what may be considered artistic anatomy. And it is particularly in these studies of internal organs where Leonardo's method excelled and was so very far in advance of similar attempts so far as we know them. I will endeavor to give an idea of his study of the heart, which occupies a great number of his sheets, although it is almost impossible to do justice to it, both as to his ingenious procedure and the penetration of his mind without constant reference to all of his many sketches. For here, more than in any other field, is it necessary to see plastically, in the three dimensions, so as to understand both structure and function. Leonardo, realizing the difficulty of verbal description says: "Oh, writer, how can you adequately describe in words the entire configuration, as is done in this drawing? Your description is confused, lacking in knowledge, and you can convey but little knowledge of the true forms to the listener; and you are mistaken when you think that you can satisfy him by talking on any solid object which is surrounded by planes. Remember not to get involved in verbal explanations unless you address the blind. . . With what words will you describe this heart, without writing a book and without confusing the mind of the hearer by the very minuteness and thoroughness of your description? You will always need another commentator or return to experience which, again being very short for anyone, can impart only a relatively restricted notion of the whole of which you desire integral knowledge."*

* This is my own translation, which differs somewhat from that given in the Quaderni, II, p. 2, of which the original is as follows: "Chon quali lettere descriverai questo chore che tu non enpla un

The pictorial representation Leonardo gives of the heart follows two directions. In the one he draws evidently from the objects before him,

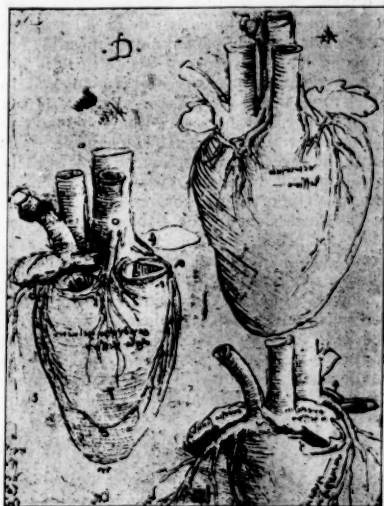


FIG. 1.—The inscription on the left sketch reads: "Vessels surrounding limits of right ventricle." This relationship is very similarly demonstrated in one picture in Henle. (from Quad. II, fol. 4r.)

in the other he schematizes. The drawings from the dissected objects—mostly bovine hearts—show his penetrating observation and also his skill in dissection. Anyone who has had experience in drawing from anatomical objects knows

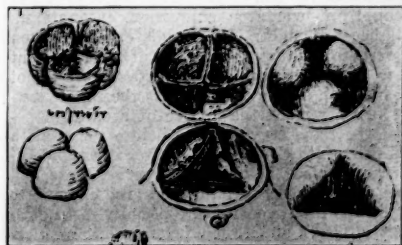


FIG. 2.—Inscription reads: "Cusps of valves in left ventricle when it closes up." The lower sketch on the left probably represents a wax cast of the valve. (from Quad. II, fol. 9v.)

how difficult it is to prepare the organ and place it so that the special points one wishes to emphasize and their correlations are properly brought out in the delineation. It is, I believe,

libro, e quanto più lungamente criverai alla minuta, tanto più confonderai la mente dello uditore, e sempre arai bisogno di sponitori o di ritornare alla speriencia, la quale in voi e brevissima a dà notizia di poche cose rispetto al tutto del subbietto di che desiderai integral notizia."

no exaggeration to assert that, up to Henle, attempts in this direction were rather primitive. This is of interest here because in some of Leonardo's drawings we find him employing methods of representation very similar to those of Henle for the purpose of demonstrating complex relations, the coronary vessels on the heart surface, for instance, to name only one example. Also, his schematic drawings do not merit the scorn which some strictly descriptive anatomists have heaped upon them. The schema as a stepping-stone between the true image and a concept has certainly done much mischief in the historical evolution of thought, but only when considered and used by itself without verification. As a help to a clear understanding of complex objects, and especially when their component parts vary in themselves or in relation to others, as implied in the functions of organs, for instance, comprehension without a schematic representation is almost impossible. For an evolution of Leonardo's actual knowledge his schematic drawings are more important than his strictly objective delineations or his notes. That Leonardo constantly endeavors to verify and correct his schematic drawings is evident from their frequent variation. In order to enable him to do this he employs several ingenious devices aside from careful and intelligent dissection. So it appears from some of his drawings that he employed some method for hardening the heart *in toto* (Holl). For a demonstration of the relative position of different parts such a method has obvious advantage, but in Leonardo it astonishes as an anticipation of most modern technic; the same in his use of horizontal and longitudinal cross-sections at different levels of the heart to show the relative position of the ventricles. He also employs currently injections of wax or plaster to inform himself better of the configuration and the size of cavities. So he obtains casts of the heart ventricles and most instructive plastic pictures of the semilunar valves, and it is very probable that he also used wax for injecting the coronary and other blood vessels. Characteristic of his desire for exactness is the use he makes, wherever possible, of mathematics, a desideratum of scientific research to which he gives frequent expression: "There is no certainty where one cannot apply one of the mathematical sciences."*

* "Nessuna certezza e dove non si applicare una delle scienze matematiche che overche non sono unite con esse matematiche." This sentence from the Paris MS. G. (fol. 96 verso, Ravaisson-Mollien) exhibits a feature frequent in Leonardo's notes and one which produces sometimes the effect of obscurity. It is the repetition in different words of the same or similar sense within one sentence. Sometimes it appears as a sort of practice in expression, an intention quite obvious on many other pages, and in his lists of words and synonyms; sometimes he seems to amplify the sense, as for instance in the phrase: "Il chore he un muscolo il principale di forza e di potentissimo sopra li altri muscoli." (MS. G. fol. 1, verso) a translation of which is attempted in the following paragraph.

(To be continued.)

Original Articles.

THE MENACE OF SYPHILIS OF TODAY TO THE FAMILY OF TOMORROW.

By J. HARPER BLAISDELL, M.D., BOSTON,

Physician, Skin Department, Boston Dispensary; Dermatologist, Lynn Hospital; Assistant, Skin Department, Massachusetts General Hospital.

[From the Records of the Skin Department of the Boston Dispensary.]

EVERY new case of syphilis confronts the community with three distinct problems menacing to its health and well-being. There is the menace of the source of the present infection,—in most instances uncontrolled,—the danger from which is shown by the presence of the new case. The case at hand becomes a menace in turn to the clean-living public in proportion to the extent of contact, the infectiousness of the lesions and the inadequacy of the treatment received. The third menace is the great probability of passing the disease to the present or future marital partner, and in time of blighting the coming generation.

Immoral sexual intercourse is the common source from which all cases of syphilis start. An absolute control at this point would mean the ultimate automatic control of the tragic by-products of the disease,—extra-genital, marital, and congenital syphilis. Prostitution in Boston is largely a matter of the individual. Organized vice in the form of tolerated, sharply bounded districts and protected houses does not exist. As a result, the majority of victims may as successfully look for the proverbial "needle in the haystack," as to find again their particular partner to the infection, who is still fitting without restraint through the countless accessories to vice in this city and its suburbs. Thus, under the present vice conditions in Boston, even the most elementary follow-up work to control foci of infections among the immoral can be done only under the most taxing handicaps.

The menace of the syphilitic to the clean living public is a very real one. In a previous article by the author¹ this particular phase of the problem in Boston has been dealt with in detail. The occupational and family life brings the syphilitic with active lesions in daily contact with many innocent people. That this peril is not one of theory alone is shown by the fact that the cities of New York, Toronto, and Boston are making examinations for contagious and infectious diseases among the restaurant workers. The syphilitic patients at our clinic make little effort to follow up even the most elementary treatment. Twenty-eight per cent. of our patients for one year never returned. The criticism that this condition is exaggerated or purely local is not sustained. In a statistical efficiency report of conditions in New York City, Barringer and

Platt² report that 29% of 116 patients in a city clinic came but once.

The history of preventive medicine can present to-day no greater tragedy of disease than the home invaded by syphilis. Infection from immoral relations is the result of a danger to which the individual exposes himself with open eyes. Extra-genital infection acquired in the way of ordinary living forms but a tiny percentage of the total number of cases. But hosts of innocent syphilides of the home are compelled to bear the penalty for the wrong-doings of others in years of ill-health and by death.

A study of detailed cases of family syphilis brings a keener realization of the price that the community pays for the presence of syphilis in the home than any consideration of mass statistics. For this purpose thirty families were tabulated according to their medical and social histories as they appeared for treatment at the Skin Department of the Boston Dispensary. Members of this group are designated "syphilitic" or "healthy" only when the present condition has been unmistakably established. The other classifications are made, according to the best judgment of the writer, after careful consideration of the facts at hand. The cases in detail are as follows:

FAMILY 1.

Husband. Refused to come to the clinic for examination. Has always been healthy as far as his wife knows. (Probably syphilitic.)

Wife. Married three years and knew husband seven years previous to that. Showed late secondary syphilide and complained of headaches. (Syphilitic.)

Pregnancies.

1. Miscarriage at 7 months. (Probably syphilitic.)
2. Miscarriage at 2 months. (Probably syphilitic.)
3. Miscarriage at 2 months. (Probably syphilitic.)

FAMILY 2.

Husband. Was given three injections of salvarsan at the Boston City Hospital three years ago but has not continued treatment for the past two years as he feels and considers himself well. (Syphilitic.)

Wife. Showed a late secondary syphilide and complained of general pains. (Syphilitic.)

Pregnancies.

1. Boy, 7 years old, living and well. (Healthy.)
2. Girl, full-term, lived 40 minutes. (Probably syphilitic.)
3. Still-born. (Probably syphilitic.)

FAMILY 3.

Husband. Married at 22. Developed secondary syphilis a few months after marriage. Drank hard. Became feeble-minded and died at the Taunton Insane Hospital. (Syphilitic.)

Wife. Married at 18. Left husband ten times because of drunkenness and abuse and returned on his promises to reform. Came to the clinic with mucous patches, hoarseness and headaches. (Syphilitic.)

Pregnancies.

1. Miscarriage at 6 months. (Probably syphilitic.)
2. Induced miscarriage at 3 months.
3. Boy, died in 2 days. (Probably syphilitic.)
4. Miscarriage at 2 months. (Probably syphilitic.)

FAMILY 4.

Husband. Denied all venereal disease by history and by symptoms. Has a syphilitic aortitis of many years' duration. Is treating at the Peter Bent Brigham Hospital. Wassermann strongly positive. (Syphilitic.)

Wife. Married at 20. Denies all sexual relations previous to marriage. General health good except for chronic diarrhea of many years' duration. Wassermann strongly positive. (Syphilitic.)

Pregnancies.

1. Miscarriage at 8 months. (Probably syphilitic.)
2. Miscarriage at 5 months. (Probably syphilitic.)
3. Miscarriage at 2 months. (Probably syphilitic.)
4. Boy, 16 years old, living and well. Wassermann strongly positive. (Syphilitic.)
5. Miscarriage at 4 months. (Probably syphilitic.)
6. Miscarriage at 4 months. (Probably syphilitic.)
7. Girl, 12 years old. Has had "heart trouble" for years. Wassermann strongly positive. (Syphilitic.)

FAMILY 5.

Husband. Contracted syphilis two years before marriage. Did not have any comprehension of the seriousness of the disease and took treatment for only a little while. Feels perfectly well now and declines to take treatment under any circumstances. (Syphilitic.)

Wife. Married at 18 to her first husband, by whom she had five healthy children. Married second husband five years ago. Has had no symptoms of the disease. Wassermann strongly positive. (Syphilitic.)

Pregnancies.

6. Boy, 3 years old, congenital syphilitic. (Syphilitic.)
7. Girl. Died in 10 days. The child is said to have peeled and turned black. (Probably syphilitic.)

FAMILY 6.

Husband. Cured a "woman sickness" during his honeymoon. Is at present a soldier in the Italian army. (Probably syphilitic.)

Wife. Complained of general malaise and vague pains. Wassermann positive. (Syphilitic.)

Pregnancies.

- 1-7. Miscarriages. (Probably syphilitic.)
8. Girl, a congenital syphilitic, that died in two days. (Syphilitic.)

FAMILY 7.

Husband. Not under any treatment and nothing definite known about his condition. (Probably syphilitic.)

Wife. Has suffered with interstitial keratitis and severe headaches. (Syphilitic.)

Pregnancies.

1. Miscarriage at 7 months. (Probably syphilitic.)
2. Miscarriage at 7 months. (Probably syphilitic.)
3. Miscarriage at 7 months. (Probably syphilitic.)
4. Boy, 5 months old, congenital syphilitic. (Syphilitic.)

FAMILY 8.

Husband. (First.) Nothing known about his health or his present whereabouts. (Probably syphilitic.)

Husband. (Second.) Old syphilitic case, now starting locomotor ataxia. Wassermann strongly positive. (Syphilitic.)

Wife. Married first husband at 17. Divorced him three years later for unfaithfulness. Married second husband at 25. No pregnancies by second husband. Wassermann strongly positive. (Syphilitic.)

Pregnancies.

1. Miscarriage at 3 months. (Probably syphilitic.)

FAMILY 9.

Husband. Was always sickly, had a cough, lost his voice, and finally died of what was supposed to be tuberculosis. (Probably syphilitic.)

Wife. Has always been well except for gummata of the legs. (Syphilitic.)

Pregnancies.

1. Miscarriage at 8 months. (Probably syphilitic.)
2. Miscarriage at 6 months. (Probably syphilitic.)
3. Miscarriage at 6 months. (Probably syphilitic.)

FAMILY 10.

Husband. Had intercourse with many women during his early married life. Took spasmodic treatment for syphilis from various doctors. Died suddenly of "heart trouble" two years ago. (Syphilitic.)

Wife. Has had poor health and pains in the legs and the chest for years. Wassermann strongly positive. (Syphilitic.)

Pregnancies.

1. Still-born. (Unclassed.)
2. Boy, 14 years old, living and well. Wassermann negative. (Unclassed.)
3. Boy, 12 years old, that has "fits." Wassermann strongly positive. (Syphilitic.)
4. Boy, 10 years old, that has always been sickly. Wassermann strongly positive. (Syphilitic.)

FAMILY 11.

Husband. Denies all venereal disease and feels perfectly well. Wassermann moderately positive. (Syphilitic.)

Wife. Complains of headache, indigestion and vague symptoms. Health had always been excellent up to the beginning of the first pregnancy. Is now two months pregnant. Wassermann strongly positive. (Syphilitic.)

Pregnancies.

1. Boy, 16 months old, strong and healthy in every way. Wassermann moderately positive. (Syphilitic.)

FAMILY 12.

Husband. Began to have immoral relations with women shortly after marriage. Hard drinker and has been committed to state institutions four times. Is not living with wife at present. (Probably syphilitic.)

Wife. Married at 18. General health has always been good. Wassermann moderately positive. (Syphilitic.)

Pregnancies.

1. Girl, died at four months of unknown trouble. (Unclassed.)
2. Miscarriage at 4 months. (Probably syphilitic.)
3. Miscarriage at 6 months. (Probably syphilitic.)
4. Miscarriage at 4 months. (Probably syphilitic.)
5. Boy, 10 years old, that has a syphilitic hip trouble. (Syphilitic.)
6. Girl, 7 years old, living and well. (Unclassed.)
7. Girl, 4 years old, living and well. (Unclassed.)

FAMILY 13.

Husband. Denies all venereal disease and health has always been excellent. Wassermann strongly positive. (Syphilitic.)

Wife. Married at 15 in Syria. Health has always been good. Wassermann moderately positive. (Syphilitic.)

Pregnancies.

1. Girl, 24 years old, living and well. (Unclassed.)
2. Miscarriage at 4 months. (Unclassed.)
3. Girl, 20 years old, living and well. Wassermann negative. (Unclassed.)
4. Boy, 18 years old, that is very feeble-minded. (Probably syphilitic.)
5. Miscarriage at 3 months. (Probably syphilitic.)
6. Boy. Became "crippled" so that he was never able to walk, and died at 9 years of an unknown trouble. (Probably syphilitic.)
7. Miscarriage at 2 months. (Probably syphilitic.)
8. Girl. Became "crippled" at 4 months in the same way as did Child 6 and died at 5 years. (Probably syphilitic.)
9. Boy. Became "crippled" at 4 months as did the other children and died at 2 years of congenital syphilis in the Children's Ward of the Boston Dispensary. (Syphilitic.)

FAMILY 14.

Husband. Contracted syphilis a short time before marriage. Has had irregular treatment for several years. (Syphilitic.)

Wife. Married at 17. Health has always been excellent. Wassermann moderately positive. (Syphilitic.)

Pregnancies.

1. Girl, 18 years old, that is a congenital syphilitic. (Syphilitic.)
2. Boy, 16 years old, living and well. (Unclassed.)
3. Boy, lived only 4 hours. (Probably syphilitic.)
- 4-10. Woman claimed to have caused 7 miscarriages in succession by introducing a catheter

dipped in vaseline into the uterus when she was about three months pregnant.

11. Girl, 4 years old, congenital syphilitic. (Syphilitic.)

FAMILY 15.

Husband. Contracted syphilis before marriage. Has been insane for 14 years and is at present confined in one of the State Hospitals for the Insane. (Syphilitic.)

Wife. Married at 20. Husband was "queer" at the time she married him. Has suffered from severe headaches for years. Wassermann strongly positive. (Syphilitic.)

Pregnancies.

1. Still-born. (Probably syphilitic.)
2. Miscarriage at 2 months. (Probably syphilitic.)
3. Miscarriage at 5 months. (Probably syphilitic.)
4. Boy, died at 8 months of "brain trouble." (Probably syphilitic.)

FAMILY 16.

Husband. Contracted syphilis about 9 years ago. Took treatment for only a few months. (Syphilitic.)

Wife. Healthy in every way according to the husband, who declines to have her come to the hospital for observation. (Probably syphilitic.)

Pregnancies.

1. Boy, 18 years old, living and well. (Healthy.)
2. Girl, 16 years old, living and well. (Healthy.)
3. Girl, 11 years old, living and well. (Healthy.)
4. Miscarriage at 4 months. (Probably syphilitic.)

FAMILY 17.

Husband. Wife states that he is a "cheap sport." Since marriage continues immoral relations with women, and in one instance was the father of an illegitimate child. (Probably syphilitic.)

Wife. Married at 19. Husband deserted her about a year ago. Has always been the sole means of support for the family. Is now working in a candy factory and is applying for a divorce. (Syphilitic.)

Pregnancies.

1. Miscarriage at 4 months. (Probably syphilitic.)
2. Miscarriage at 7 months. (Probably syphilitic.)
3. Miscarriage at 7 months. (Probably syphilitic.)

FAMILY 18.

Husband. Came to the clinic 6 years ago and was treated for two months only. No treatment since. (Syphilitic.)

Wife. Complains of headaches and has gummata on the legs. Has been taking occasional treatment for 5 years. (Syphilitic.)

Pregnancies.

1. Boy, 9 years old, living and well. (Healthy.)
2. Boy, 6 years old, that has been treated for congenital syphilis since birth. (Syphilitic.)

FAMILY 19.

Husband. Characterized by wife as a "cheap sport" and a hard drinker. Had immoral relations with other women beginning three weeks after marriage. Deserted wife 4 years ago. (Healthy.)

Wife. Married at 21. Knew husband only a few weeks before marriage. Two years following separation from her husband she met a musician, whose special attraction was a touring car. He has a wife and five children. Through him this woman contracted syphilis and became pregnant. With the help of the Children's Aid Society the case was settled for \$500 and a monthly payment of \$10 to the grandmother for taking care of the child. Woman came to the clinic with a late rash and lesions on the palms. Wassermann strongly positive. (Syphilitic.)

Pregnancies.

1. Girl (by husband), 6 years old, living and well. (Healthy.)
2. Boy (by musician), 9 months old, with syphilitic periostitis and snuffles. (Syphilitic.)

FAMILY 20.

Husband. Nothing definite known about his habits. Died of pneumonia 4 months after marriage. (Syphilitic.)

Wife. Pretty but mentally defective girl. Married in January, 1913, at 18. Developed syphilis and became pregnant in February. Husband died in April. Congenital syphilitic child born in November. Since that time the baby has received institutional care in various places and the mother has worked as a waitress in many restaurants, including eight months at a Wellesley College dining hall. In spite of 8 salvarsans and much mercury at another hospital, the girl appeared in the clinic for the first time with mucous patches, split papules, and very extensive condylomata. The menace that she was to others was particularly impressed upon her at that visit. One week later the patient returned and stated in an embarrassed way that the night following her visit to the clinic she had yielded to the persuasion of a persistent suitor and was married to him by a justice of the peace. Learning of his wife's condition the bridegroom left his wife 10 days after marriage and is now suing for divorce. It is not known whether he became infected. The girl is now working as a waitress, and, according to her own story, is leading the life of a common prostitute. She is also pregnant by a party unknown to her. (Syphilitic.)

Pregnancies.

1. Boy, 19 months old, congenital syphilitic. (Syphilitic.)

FAMILY 21.

Husband. Has always been in good health and refused to be examined. (Probably syphilitic.)

Wife. Has been in poor health for years. Wassermann strongly positive. (Syphilitic.)

Pregnancies.

1. Boy, 9 years old, living and well. (Healthy.)
2. Girl, died at 4 years of diphtheria.
3. Still-born. (Probably syphilitic.)
4. Still-born. (Probably syphilitic.)
5. Still-born. (Probably syphilitic.)
6. Still-born. (Probably syphilitic.)

FAMILY 22.

Husband. Runaway marriage at the age of 21. Never lived with his wife and the marriage was never known. (Healthy.)

Wife. Married at 16. General health has always been excellent. Came to the clinic with a late syphilitic eruption. Has had one "friend" for the

past 14 years by whom she has been pregnant twice. (Syphilitic.)

Pregnancies.

1. Miscarriage at 5 months. (Probably syphilitic.)
2. Miscarriage at 3 months. (Probably syphilitic.)

FAMILY 23.

Husband. Denies all venereal disease. Trouble started one year ago with girdle pains and dizziness when walking. Now has a well advanced case of locomotor ataxia. Wassermann strongly positive. (Syphilitic.)

Wife. Denies all exposure other than husband. Has always been in good health. Wassermann strongly positive. (Syphilitic.)

Pregnancies.

1. Girl, 3 years old, living and well. (Probably syphilitic.)
- 2 and 3. Twin boy and girl, 6 months old, living and well. (Probably syphilitic.)

FAMILY 24.

Husband. Is a member of a fire department. Has always been a periodic hard drinker and has had constant immoral relations with women since marriage as well as before. Contracted syphilis from a prostitute while on a drunk two years ago. His wife was pregnant with the third child at the time. (Syphilitic.)

Wife. Contracted syphilis from her husband shortly after his exposure. (Syphilitic.)

Pregnancies.

1. Boy, 6 years old, living and well. (Healthy.)
2. Girl, 4 years old, living and well. (Healthy.)
3. Girl, 6 months old, congenital syphilitic. (Syphilitic.)

FAMILY 25.

Husband. Previous history and present condition unknown. (Probably syphilitic.)

Wife. Contracted syphilis from a friend three years previous to her marriage. Treated with a private doctor for two years and was pronounced cured. Married in August, 1914. Wassermann moderately positive. (Syphilitic.)

Pregnancies.

1. Boy, died in 2 months of congenital syphilis. (Syphilitic.)

FAMILY 26.

Husband. Has had two attacks of gonorrhea and contracted syphilis two years before marriage. Received a month's treatment for syphilis from a private doctor. Has had immoral relations with four or five girls since marriage. (Syphilitic.)

Wife. Felt perfectly well and could not be induced to come to the clinic for examination. Husband states that she has occasional immoral relations with "friends." (Probably syphilitic.)

Pregnancies.

1. Miscarriage at 7 months. (Probably syphilitic.)

FAMILY 27.

Husband. Contracted syphilis in 1910. Has taken no treatment and leads a generally dissipated life. (Syphilitic.)

Wife. Married at 19 and is now 38 years old. Has been pregnant 15 times, 12 times before her husband's infection and 3 times since. Of the first 12 children 5 are living and well and 7 died of chil-

dren's diseases. This woman has had very fair health for the past twenty years. The syphilitic children have been under institutional care since birth. At the time of writing she is 5 months along in her 16th pregnancy. Wassermann moderately positive. (Syphilitic.)

Pregnancies.

13. Boy, 3 years old, congenital syphilitic. (Syphilitic.)
14. Girl, 2 years old, congenital syphilitic. (Syphilitic.)
15. Girl, 1 year old, congenital syphilitic. (Syphilitic.)

FAMILY 28.

Husband. Previous history and present condition unknown. Is too busy with his daily work to come to the clinic. (Probably syphilitic.)

Wife. General health has been good. First two children were born in Russia. Wassermann weakly positive. (Syphilitic.)

Pregnancies.

1. Girl, 16 years old, living and well. (Healthy.)
2. Boy, died at 10 months of smallpox.
3. Miscarriage at 3 months. (Probably syphilitic.)
4. Miscarriage at 3 months. (Probably syphilitic.)
5. Girl, died at 5 years of appendicitis. (Probably syphilitic.)
6. Girl, 5 years old, congenital syphilitic. (Syphilitic.)

FAMILY 29.

Husband. General health poor. Contracted syphilis shortly before marriage and is taking treatment from private doctors. (Syphilitic.)

Wife. Had three healthy children by her first husband. Contracted syphilis from her second husband 25 years ago. General health good. On coming to the clinic she showed an active palmar syphilitic. (Syphilitic.)

Pregnancies.

4. Still-born. (Probably syphilitic.)
5. Still-born. (Probably syphilitic.)
6. Boy, 21 years old. Lost sight of one eye at 4 weeks and the sight of the other at 7 years for unknown reasons. Is not normal mentally. (Probably syphilitic.)

FAMILY 30.

Husband. Contracted syphilis from a married friend during his wife's pregnancy. Wassermann strongly positive. (Syphilitic.)

Wife. Came to the clinic with active secondary lesions. Wassermann strongly positive. (Syphilitic.)

Pregnancies.

1. Boy, 3 months old, congenital syphilitic. (Syphilitic.)

A statistical summary of the ravages of syphilis in these thirty families is as follows:

HUSBANDS.	
Syphilitic	19
Probably syphilitic	10
Healthy	3
Total	32
Under treatment at clinic.....	10
Under treatment elsewhere.....	3
No treatment.....	12

Dead (syphilitic).....	4
Healthy.....	3
Total	32

WIVES.

Syphilitic.....	28
Probably syphilitic.....	2
Healthy.....	0

Total 30

Under treatment at clinic.....	28
Under treatment elsewhere.....	0
No treatment.....	2
Dead.....	0

Total 30

PREGNANCIES.

LIVING.

Syphilitic.....	19
Probably syphilitic.....	5
Healthy.....	23
Unclassed.....	6

Total 53

DEAD.

Miscarriages.	
Still-births.	
(Syphilitic).....	53
Miscarriages.	
(Other causes).....	8
Intercurrent diseases with syphilis..	6
Other diseases.....	9
Unclassed.....	3

Total 79

Total pregnancies..... 132

Husbands. Less than 10% escaped the infection. Four died with syphilis a contributing factor. Two suffered with insanity. Twelve out of a possible twenty-five are not taking any treatment.

Wives. Twenty-eight out of thirty of the women were infected, and the remaining two probably had the disease. The women were usually the first members of the family groups to come to the clinic and number under treatment is relatively large when compared with the number of the men.

Pregnancies. There were 132 definite pregnancies in these thirty families. These resulted in only 23 healthy children, the large majority of whom were born before infection entered the family. Of the 53 living children syphilis claims at least 24 or 45%. In the cases of the 79 deaths syphilis may be credited as the probable causative factor in at least 59 or 74%. Totalling, syphilis scores in 83 out of 132 pregnancies, or 62%.

The early syphilis of to-day can well be depended upon to furnish the family syphilis of tomorrow. Syphilis is usually acquired by the unmarried of both sexes in early adult life. Lulled to a false security by the lack of symptoms after a short course of treatment the patients marry. The marital partners may appear

in the clinic with the early symptoms of syphilis and the originators reappear with the late lesions. The truth of this generality is shown by a tabulation of the type, age, and marital status at the time of entrance of 500 consecutive cases of adult syphilis in this clinic.

SINGLE MEN.

Age.	—20	21-25	26-30	31-40	41+	T.	T. %
Early	24	67	24	10	7	132	.264
Secondary	11	20	24	19	6	80	.160
Late	0	0	2	15	7	24	.048
Total	35	87	50	44	20	236	
Total %	.070	.174	.100	.088	.040	.472	.472

SINGLE WOMEN.

Age.	—20	21-25	26-30	31-40	41+	T.	T. %
Early	8	2	0	0	0	10	.020
Secondary	9	10	4	1	0	24	.048
Late	0	0	0	1	0	1	.002
Total	17	12	4	2	0	35	
Total %	.034	.024	.008	.004	.000	.070	.070

MARRIED MEN.

Age.	—20	21-25	26-30	31-40	41+	T.	T. %
Early	0	10	7	5	6	28	.056
Secondary	0	3	10	9	6	28	.056
Late	0	1	7	8	28	42	.084
Total	0	14	24	22	38	98	
Total %	.000	.028	.048	.044	.076	.196	.196

MARRIED WOMEN.

Age.	—20	21-25	26-30	31-40	41+	T.	T. %
Early	3	3	0	6	2	14	.028
Secondary	8	18	12	22	7	67	.134
Late	0	1	2	21	26	50	.100
Total	11	22	14	49	35	131	
Total %	.022	.044	.028	.098	.070	.262	.262

Single Men. (236 Cases.) The single men comprised over 47% of the entire number of cases. Two hundred and twelve had early or secondary syphilis, and 172 (72%) contracted the disease before their thirtieth year. Considering that a large proportion of these men will marry and that on an average 70% of them make less than five visits to the clinic, the tremendous danger to their future homes can be realized.

Single Women. (35 Cases.) Where does the clinic's quota of single women, proportionate to the number of single men, go for treatment? With few exceptions the 236 single men probably represent as many different women who have been active foci. Yet the group of single women coming to the clinic is nearly 85% less than the group of single men. Statements from many doctors are all in agreement that the number of single women among their private patients is proportionately small. The bringing under medical supervision of the relatively large number of single women, now apparently under no control, would go a long way toward removing

active foci of infection and minimizing the danger to their future husbands and children. As with the single men, syphilis was acquired at an early age, 29 out of 35 contracting it under 25 years of age.

Married Men. (98 Cases.) Among the married the tide turns toward the later stages of the disease. Sixty out of 98 cases came to the clinic after their thirtieth year and nearly half the cases presented late symptoms.

Married Women. (131 Cases.) In contrast to the single women, the number of married women is considerably larger than the number of married men. It is in this group of "women of the home" that the members missing from the group of "women of the street" appear with the later lesions of the disease. Only 14 of the 131 married women came to the clinic with lesions of less than three months' duration. Fifty or 38% of the number had late or gummatous lesions.

SUMMARY.

1. The menace of syphilis in the home is one of the greatest problems of preventive medicine.
2. In thirty families, 59 out of 62 parents were probably infected.
3. Of 132 possible children, only 23, most of whom were born before their parents' infection, were healthy.
4. Of the remaining 109, syphilis claims through miscarriage, later death, or congenital disease at least 83 pregnancies.
5. Syphilis will appear in the home of tomorrow in proportion to the inadequacy of treatment among the "men and women of the street" of today.

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² Barringer and Platt: *Social Hygiene*, June, 1915.

VAGINAL HYSTERECTOMY FOR PROCDENTIA, WITH A REPORT OF FIFTY CASES.*

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THE surgical problem which deals with complete prolapse of the uterus is in principle similar to that applied to the cure of hernia elsewhere. The operation involves the excision of a large pendulous sac with the reduction and retention or removal of its contained organs. The over-stretched bladder and rectum are detached from the sac and allowed to contract. The bladder must be elevated and supported upon a shelf erected by an appropriate use of the pelvic ligaments. The importance of creating a deflecting plane as an effective resistance to intra-abdominal pressure is paramount. Goffe¹ quotes Sturmdorf in his own elaboration of this principle.

* Read before the New Hampshire Surgical Club, April 11, 1916.

Vaginal hysterectomy is one of the very useful operations employed in the execution of these measures. Its application is limited to a class of cases in which conservation of the uterus may be disregarded. The wisdom of its choice, however, in most cases, has been a subject of controversy. Many of the continental authors favor the Wertheim-Shauta operation which preserves the uterus, while in America a fair division of opinion is maintained toward the Watkins-Wertheim anterior transposition operation, vaginal hysterectomy, and some form of suspension or fixation of the uterus. Goffe,² and C. H. Mayo,³ among others, advocate vaginal hysterectomy in a group of patients past forty years of age, manifesting prolapse of the complete type.

In general, the details of technic will vary to meet the requirements in each case. The uterus may be found in a state of sub-involution or atrophy, but the one constant and often startling revelation is the unusual length of the cervix, often exceeding that of the body by several centimeters.

The weak point may be in front of the uterus in the region of the bladder or it may be the uterosacral ligaments and perineum, allowing the descent of the uterus and rectum. In patients over fifty years of age the tissues are often found

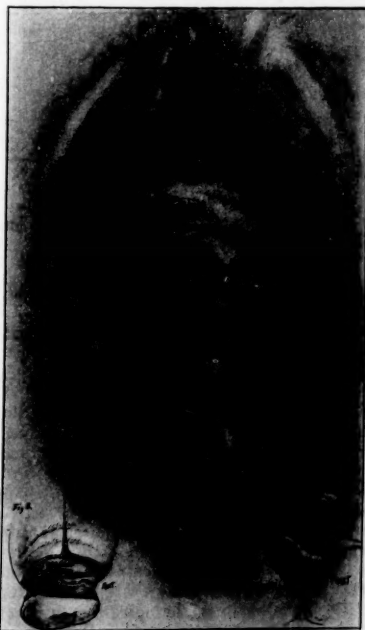


PLATE I.—Procidentia of the complete type. Reproduced from Case 44. Figs. 2 and 3 show the first incision encircling the cervix. The bladder is exposed anteriorly and the rectum posteriorly.

Case	Sex	Age	Number of Children	Duration of Symptoms	Degree of Descent	Date of Operation	Present Condition
1	B.C.	45	7	10 years	Complete	June 1910	Examined
2	M.H.	54	8	7 years	Complete	Nov. 1910	Examined
3	M.B.	60	11	6 years	Complete	Nov. 1910	Examined
4	S.E.L.	45	5	3 years	Complete	Dec. 1910	Reported
5	E.A.R.	53	5	10 years	Complete	Jan. 1911	Examined
6	R.C.	55	1	4 years	Complete	March 1911	Reported
7	B.C.	39	2	6 years	Complete	April 1911	Examined
8	M.B.	44	9	2 years	Complete	Aug. 1911	Examined
9	L.D.	67	14	5 years	Complete	Nov. 1911	Examined
10	E.P.	51	6	11 years	Partial protrusion of cervix	Jan. 1912	Examined
11	E.P.	35	5	10 years	Complete	March 1912	Examined
12	J.F.S.	45	5	2 years	Complete	March 1912	Examined
13	C.C.	50	6	14 years	Complete	March 1912	Examined
14	M.A.S.	49	5	8 years	Complete	May 1912	Reported
15	R.B.	40	1	1 year	Complete	May 1912	Not traced
16	J.D.	54	5	1 year	Complete	May 1912	Examined
17	E.L.	48	5	12 years	Complete	April 1912	Examined
18	P.B.	35	1	10 years	Partial protrusion of cervix	July 1912	Examined
19	M.H.	45	None	5 years	Complete	Sept. 1912	Examined
20	J.L.	45	5	5 years	Partial protrusion of cervix	Sept. 1912	Not traced
21	E.M.P.	41	2	4 years	Complete	Oct. 1912	Examined
22	P.B.	76	1	3 years	Complete	Dec. 1912	Examined
23	J.L.	49	14	2 years	Partial protrusion of cervix	Nov. 1912	Examined
24	M.B.	45	12	1 year	Partial protrusion of cervix	Nov. 1912	Examined
25	M.A.P.	39	1	5 years	Complete	Jan. 1913	Examined

to have undergone degeneration, are friable, and thus allow the sutures to cut through. The obvious result is a weak, imperfect union of the broad ligament stumps, or no union at all. A solid pelvic floor is very essential to success but it will not support the vaginal walls without a reasonable support above. An occasional failure in my series of cases was undoubtedly due to a separation of the broad ligament line of union. To make better provision against such faulty union of the broad ligaments with a strip of uterine muscle to form a central body of support. This method in many cases will serve to fortify a weak step in the operation as usually done. The procedure differs from the operation described by Watkins,⁴ inasmuch as the entire cavity and elongated cervix are removed. In other respects the technic does not differ essen-

tially from that commonly used and may be described as follows:

The cervix is first grasped with a volsellum forceps. While held in position an incision is made encircling the cervix immediately below the bladder line. By sponge dissection the bladder is separated from the elongated cervix up to the peritoneal fold, which is deflected from the uterine body to the bladder. This is opened while the bladder is supported upon the long flat blade of a retractor. The mucous membrane in the lateral and posterior sulcus of the vagina is also separated by sponge dissection. The uterine artery on either side is tied and cut. The fundus uteri is then delivered through the peritoneal opening in front and the central portion of the uterine body with the entire cervix is removed after the manner illustrated in Plate III. Apposition by interrupted catgut suture is then made of the uterine muscle stumps of the broad ligaments. Upon the anterior surface of this central body is now sutured the dependent portion of the bladder, two or three catgut sutures being used for this purpose. The remaining distance of this central

26	B.F.	62	9	2 intra- mental	12 years	Complete	Jan. 1912	Examined	Good anatomical result. No pelvic symptoms.
27	M.A.L.	67	2	Intra-mental	4 years	Complete	Jan. 1912	Examined	Good anatomical result. No pelvic symptoms.
28	A.H.D.	36	6	Normal	2 years	Complete	Feb. 1912	Examined	Well satisfied with result.
29	T.B.	39	2	Normal	10 years	Partial protrusion of cervix	March 1912	Examined	Good anatomical result. No pelvic symptoms.
30	M.H.	54	10	Midwife attendance	10 years	Complete	June 1912	Examined	Good anatomical result. Well.
31	E.B.	45	4	1 intra- mental	6 years	Complete	Oct. 1912	Reported	Not well.
32	M.H.	54	4	1 intra- mental	6 years	Partial protrusion of cervix	Nov. 1912	Examined	Good anatomical result. No pelvic symptoms.
33	E.M.P.	67	2	1 intra- mental	4 years	Complete	Jan. 1914	Examined	Anatomical result—partial success
34	M.T.P.	55	5	Midwife attendance	1 year	Complete	Feb. 1914	Examined	Good anatomical result.
35	J.F.	40	1	Normal	5 years	Complete	March 1914	Examined	Good anatomical result.
36	M.S.	40	10	2 intra- mental	4 years	Partial protrusion of cervix	April 1914	Examined	Good anatomical result.
37	E.C.B.	39	4	1 intra- mental	5 years	Complete	Sept. 1914	Examined	Good anatomical result.
38	T.F.	41	5	Normal	4 years	Complete	Dec. 1914	Examined	Good anatomical result. No pelvic symptoms.
39	B.O.P.	58	None		1 year	Complete	Dec. 1914	Examined	Good anatomical result. Well.
40	B.L.	54	10	Normal	5 years	Complete	Jan. 1915	Examined	Good anatomical result. Well.
41	M.B.	60	11	Midwife attendance	15 years	Complete	Jan. 1915	Examined	Good anatomical result. Backache.
42	M.B.	54	4	Normal	5 years	Fibroid complete	Jan. 1915	Reported	Satisfactory result from operation.
43	A.B.	49	None		1 year	Complete	Jan. 1915	Examined	First operation—failure. Second operation necessary in 1916.
44	L.G.	62	10	2 intra- mental	5 years	Complete	May 1915	Reported	Good result from operation.
45	E.A.	66	4	1 intra- mental	30 years	Complete	April 1916	Reported	Good result from operation.
46	C.H.	54	5	Normal	1 year	Complete	July 1916	Examined	Good anatomical result. Well.
47	M.G.	40	10	Normal	3 years	Complete	Aug. 1916	Examined	Good anatomical result. Well.
48	E.G.	54	6	Normal	1 year	Complete	Aug. 1916	Examined	Good anatomical result. No pelvic symptoms.
49	B.F.	69	None		10 years	Complete	Aug. 1916	Examined	Good anatomical result. Well.
50	J.D.	44	6	Normal	2 years	Complete	Aug. 1916	Examined	Good anatomical result. Well.

body is sutured by interrupted catgut ligatures to the anterior vaginal walls, or the central body of the uterine muscle, above described, may be turned forward under the bladder after the manner described by Watkins. No drainage is used; a perineorrhaphy completes the operation. A self-retaining catheter is then inserted and left in place for forty-eight hours. This allows the bladder wall to contract and removes from the suture line the weight of accumulating urine.

Analysis of the fifty cases here recorded, in which vaginal hysterectomy was done for procidentia, shows that the ages of the patients at the time of operation averaged fifty years. The average duration of symptoms was five years. Ten patients had each given birth to ten children or more; nineteen had each borne between five and ten children; seventeen had each less than five children; and four were nulliparae. Sixteen patients reported that their labors had been normal. Twenty-four had been delivered

by the use of instruments and six had been attended in labor by a mid-wife on one or more occasions. In forty-two cases the procidentia was complete; in eight the descent was incomplete, the vaginal portion of the cervix resting on the anterior margin of the perineum.

In the investigation of the present condition of these patients, thirty-eight were examined by Dr. George W. Blood, Dr. Ralph W. French, and myself. Eight reported by letter and four could not be traced. The following evidence was obtained: Thirty were found to have secured good anatomical results and were free from pelvic discomforts; seven reported well but were not examined; six complained of local discomforts and were found to have some degree of cystocele or rectocele. In none of these six cases, however, was there a descent of the vaginal walls below the pudendal fissure. There were three failures and four patients could not be traced. We have, therefore, direct or indirect



PLATE II.—Separation of the bladder from the cervix up to the peritoneal fold. The sponge-covered finger is here used for dissection.



PLATE III.—A rubber-covered clamp is applied to the broad ligament about 1 cm. from the uterus. Dotted line shows the depth of the vertical incision in the muscle of the uterine body. Note the greatly elongated cervix.



PLATE IV.—Fig. 1. Uterine muscle brought together forming a central body for resistance to intra-abdominal pressure and a support to the bladder. Dependent portion of the bladder is sutured to the central line of muscle structure. Fig. 2. A lateral view shows the relation of the uterine muscle and bladder when the operation is completed.

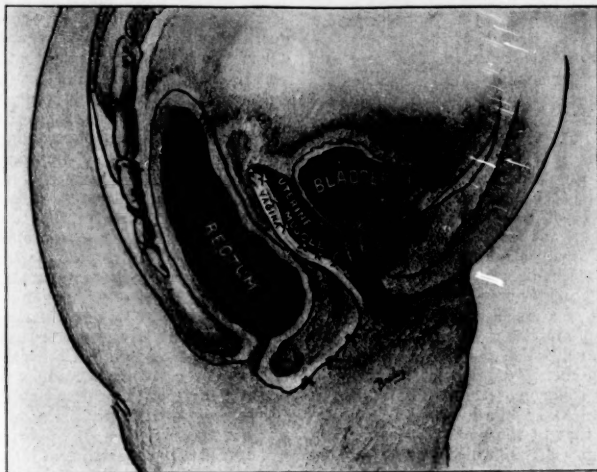


PLATE V.—Transposition of the uterine muscle body between the bladder and anterior vaginal wall.

evidence of complete success in 74%, partial success in 12%, and failure in 6%.

Although sufficient time has not elapsed for final opinion, the operation now done, as illustrated in Plates III, and V, has been employed with uniform success since January, 1915.

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THE GENERAL PRACTITIONER'S APOLOGIA PRO VITA SUA.

BY ANDREW F. DOWNING, M.D., CAMBRIDGE, MASS.

A LACK of unity among its members, and an excess of organization which threatens to become pathological are the ills that disturb today the peace and harmony of the medical profession. The general practitioner, beloved of other days, finds himself obliged to mitigate the presumption of his claim to medical knowledge by a proper sense of humility in the presence of the modern specialist. At the big medical meetings, he is confronted with a confusing list of section and sub-section meetings, and when, like a man without a country, he wanders aimlessly into a conference in the hope of gleaning some knowledge, he is too often obliged to listen to a dissertation on his own shortcomings. For him there seems to be no place. He appears to

be only a convenient *causa mortis* of the patients of specialism, merely an ever ready excuse for the advertising of that new human paradox of medical origin, the ethical quack. Occasionally he is praised for his heroism, seldom for his knowledge; but he has at last come to recognize that this, too, is the same brand of altruistic hypocrisy that vice so often exhibits when she generously pays public tribute to virtue.

There is a fable told of the man who invited the lion to be his guest and received him with princely hospitality. The lion was shown many things to admire, countless specimens of sculpture and painting, nearly all of which represented the lion in combat with man and in which the man was always victorious and the lion always overcome. After he had gone over the mansion, his host asked him what he thought of the splendors it contained. In reply he did full justice to the riches of the owner and the skill of the decorators, but he added, "Lions would have fared better had lions been the artists."

A propaganda, characterized by cowardly and insidious attack, that has for its purpose the commercial elevation of the specialist or surgeon at the expense of the good name of the general practitioner, cannot be allowed to flourish. The time has come for the lion to be the artist. The specialist has boldly thrown down the gauntlet to the general man, and the latter must pick it up.

The primary purpose of our medical organization is to further the usefulness and dignity of the profession. No reputable man is debarred, even though he be a general practitioner. Organization is the instrument of reform, the method of intelligent coöperation for the greatest good; while the lack

of organization means inefficiency, waste of individual effort, and absence of coöperation for the good of all. The result of the latter condition is victory for the enemies of reform and the triumph of a machine.

At the beginning I stated that we were menaced by excess of organization at the price of the unity of our members. Divisions into the specialties, and subdivisions into the branches of the specialties, have resulted in a chaotic mass of antagonistic smaller bodies that seem to have nothing in common but contempt for the man in the ranks. Now excess of organization means rigidity, uniformity, and mechanical perfection, that ultimately, unless properly safeguarded, results also in the triumph of a machine. Therefore, either from lack of organization or excess of it you face the machine, which may be a weapon of corruption, an enemy of reform, a means of subverting the common welfare to unintelligent or selfish ends. And while it would be perhaps unfair to say that in the medical world a corrupt machine has arisen which can be accused of unintelligent measures, nevertheless, it is true that we are confronted with a pseudo-aristocracy whose besetting sin is a selfishness that forgets the old-fashioned courtesy "which makes a man shrink from wounding the feelings of a brother practitioner."

The general man is aware of his many imperfections. Too often, perhaps, his increasing income results in complacency and inertia, until in his lotus land of secure mediocrity, he dreams only of dollars and eagles. And yet has he not like companions among the specialists? However, mental apathy is not the rule. The general practitioner rightfully feels that any successful and honest attempt to uplift the rank and file must be accompanied and even preceded by a similar movement to rid the field of specialism of its many mushroom growths.

The solution of the problem does not consist in giving to the public the untruthful impression that the general practitioner represents only mediocrity or inefficiency, and that the magic word "specialist" always connotes education, training, experience, competency, skill, culture, and intellectuality. The true specialist had his origin in the halls of learning in the days before commercialism began to exercise its evil influence. He did not, however, stand at the gates of his citadel and, beating back commercialism, mediocrity, and inefficiency, open them wide only for the man of merit. He did not protect his stronghold by driving out those who proved unworthy of the privilege of service either through incompetency or misconduct. Gradually he allowed his place to be usurped by many who were unfit, until his house was no longer the exclusive abiding place of rare skill and profound knowledge. The new specialism begot too many men whose ignorance and effrontery, by causing them to leap where

angels fear to tread, have done much harm to those efficient specialists for whom the general practitioner has the highest regard.

It is no exaggeration to say that never has the general man entered upon his work so well equipped as at the present time. It would be an exaggeration to say the same of the specialist, who in broad vision, skill, training, experience, culture, and the arts of thinking and of observation is seldom the superior of the general man, whom he dares to treat with contemptuous patronage. The man in the ranks would be cringing if he did not rise to protest against this brazen hostility that would be much more seriously offensive to good manners, were it not rendered so amusingly ridiculous by the sublime mediocrity of this era of rampant specialism. The general practitioner has always been patient with the specialist, because courtesy and common decency have forbidden him to "draw his frailties from their dread abode." If he is now in many quarters proving to be the David to whom the Kingdom of Specialism is falling, it ill becomes the specialist to look upon him as a king of shreds and patches. The general practitioner who, in his hospital days, has rubbed elbows with him who is now practising a specialty with a slovenliness that is the handmaid of ignorance, is not likely to be awed by the fact that such a man is the "rage" among a select group of society leaders. Moreover, he refuses to pay homage to that other anomaly of specialism who, after a course of beer-sipping and wine-tasting in Heidelberg or Vienna, returns to his friends "mid the crash of brass and the beat of drum," bloated with insolent conceit, and mottled with poisonous contempt for the lowly practitioner. In short, your general man has concluded that if the specialist would only spend his days and nights striving to reach a height equal in distance to the depths into which he would plunge him, specialism by extending its horizon would at last find the "blessedness of being little" and cease to be a danger to humanity.

"So waxes fierce the strife between these god-like men." "Shun the general man," shouts the specialist to the public, "for only with us lies the knowledge that leads to bodily salvation." "Beware the specialist," retorts the general man, "and the dead and maimed will be fewer in the land." Which is right? Neither. Somewhere between the bold assertion of omnipotence of the one, and the amusing assumption of omniscience of the other lies the truth. In the political and industrial worlds there are arising many problems the solution of which is taxing to the uttermost the intellects of our greatest leaders. Preparedness is the burning question of the hour. We, too, must be prepared, for the medical world has its own problems the solving of which will "stretch to aching the *pia mater*" of her combined leadership. The problem of the general practitioner is a

social one, inseparable from many others, which no single expert is wise enough to solve. It does not suffice to tell him that this refinement of organization is necessary for the good of all, while he feels that he is held in dishonor by the small group of individuals who reap the benefit. Many a strike has occurred in an industry which was effectively organized to increase material output, but which crushed the human nature of the workers until they were roused to rebellion. The general practitioners of today, with their excellent training, and exceptional opportunities for acquiring new medical knowledge, are becoming more and more conscious of their rights and dignity as members of the medical profession; and they resent the arrogance and truculence of petty men of inferior minds upon whom accident has too often bestowed the high places. They demand respect, not as a favor, but as a just right. They will not accept the dictum that the only escape from the ranks is death, but insist that he who possesses the skill, the knowledge, and the brains to enter some special field of work be not blocked by special privilege and outspoken contempt.

Herein lies the failure of specialism and herein lies an opportunity for our medical organization. We lack a department of administration that shall set and maintain standards of efficiency for all. To say that a man is qualified to do special work because of a few months' training in a hospital is ridiculous. The inefficient interne, without capacity for development, begins his professional life after graduation, the equal of the most proficient, and he may continue his career in the same condition with impunity. Abdominal surgery is being done by men notoriously incompetent, who graduated from hospitals of reputation. Yet there is no supervising authority in our medical organization to stay their hand. A surgical training as an interne, regardless of one's ability or qualifications, seems to be the only recognized ticket of admission to the domain of surgery; and the same is true of other special fields. And he who enters the inferno of general practice must, according to present-day standards, face the sentence that Dante inscribed over the gates of hell: "All hope abandon ye who enter here." Worse even than that of Tantalus is his fate, for after having entered the gates, he must look back and see his brothers, the specialists, like demagogues, haranguing the public on his ignorance and warning them off by pointing to the inscription over the abode he has just entered.

In the past decade we have undertaken to educate the public in many things medical. Political leaders have done the same in matters pertaining to government. The initiative and referendum, the recall of judges and executives, the minimum wage, the creation of boards of labor and industry, the passage of workmen's compensation acts, old-age pensions, the call

for constitutional conventions,—all are evidences of the people's demand for social justice. There are many who feel that a closer adherence to the landmarks of our fathers and a more honest administration of justice, according to the laws they framed, would have avoided all this clamor for social equality. The people, however, once aroused, are insistent on their demands and political parties are wise enough to heed their cry, and anticipate their uncanny intelligence in whatever concerns their welfare. Let the medical profession beware, lest their free public lectures prove to be dragons' teeth from which armed giants shall spring. Let us, too, awake from our apathy and anticipate the demands of the people by showing a willingness to grapple with a few of the problems that concern the public, as well as the good name and progressiveness of our profession.

First among these serious problems is one that we have grossly neglected. Our hospitals, public and private, are too far removed from the wise supervision of our organization. A supervising power, wise as the serpent and gentle as the dove, can never be obnoxious. Hospitals derive their right to existence from the people, and, therefore, it is our duty, through impartial and honest inspection, to protect the people by seeing that a proper standard of efficiency is maintained. The private or open hospital is where such inspection is most needed. Primarily a commercial venture, it offers to the inefficient an opportunity to hide a slovenliness of work that makes it impossible, as Osler says, "for that kind old friend Dame Nature to cover their mistakes." This is the curse of all hospitals with open staffs. It is true that the patients who enter such institutions are usually the well-to-do, whose knowledge of the world ought to enable them to choose men of skill. But the old saying "where ignorance is bliss 'tis folly to be wise" becomes a fallacy here, and a word in time may save more than nine lives. With no supervision, therefore, poor work is unconsciously encouraged and ideals are allowed to become forgotten things.

Here it is that many an unskilled general man falls into the slough of medical despond, where "besieged with sable-coloured melancholy" he grieves that a good surgeon was spoiled in his making. He deceives himself that surgery is just cutting, and its fatalities, like taxes, inevitable. His brain, slumbering unto death, is overcome by intellectual marasmus and ethical anemia; his conscience suffers a kyphosis; at last all "sense is apoplex'd"; and he who goes to bed at night a physician, awakes in the morning a surgeon, determined to have his share in the graft of human life. Think not that this is facetious exaggeration. The value of human life dwarfs all exaggeration and transcends the most extravagant hyperbole. The general man is not proud of these metamorphoses in his ranks, but he blames the conditions

that make them possible. As long as the Simon Pures are allowed to set the bad example of inefficiency by selling to the people surgical green goods, we must pay the shameful toll levied by those who will not hesitate to counterfeit these green goods. Happily there are many in the ranks of the general practitioners of whose work in surgery and other specialties their colleagues are justly proud. Particularly is this true away from the larger centres where the divine right of specialism is not recognized and medical feudalism is unknown.

In the case of our larger public or semi-public hospitals, the question of having an open staff should never be considered. Fortunately, in this community, such institutions are jealously guarded. Built as a rule by the people, and for the people, many of whom are poor and unfortunate, these monuments erected for the care of suffering humanity should be held sacred. The great body of solid general practitioners are strong supporters of the closed staff, because they feel a personal interest in the patient, that almost forgotten and yet most important figure in all our medical controversies. The general man realizes that by making the entrance gate to staff preferment in these hospitals narrow and difficult to pass, the exit for his patient to health and happiness will be broad and spacious. Therefore, a kindly supervision by our organization will harm no institution that it tries to help.

Some day the idea of publishing end-results will be hailed as a rock of safety for the people, and a God-send to the medical profession. Unless we take the initiative, the people, through their representatives, will compel hospitals from time to time to make a public statement of their standing, especially as regards mortality. The state throws its protection around our banks that the funds of the people may be properly secured, and even of their own accord, at various times, our banks issue a statement to the public press as proof that they are solvent. The funds entrusted to hospitals are human lives, and surely the public ought to know something about their disposal. Today, lawmakers are heeding the demand that our public servants be held up to a high standard of efficiency by expert investigation at stated intervals. This is because the people are insisting that in return for their money they receive efficient service. They have also a right to ask that in their hospitals, both public and private, their lives be protected by every possible safeguard. The American College of Surgeons is to be congratulated for its attempt to rouse the interest of the people in this respect, but, being an organization of surgical aristocrats, it is open to the charge of narrowness. If hospital reform is to become a serious business, the American Medical Association cannot sidestep the responsibility or look upon it as a

simple contract to be sublet to a group of subordinates, or to an independent corporation.

The federalization of our state boards of examination for admission to practice is another question that only persistent effort will solve. What matters it if defeat after defeat be our lot if undaunted we return to the fight? In numbers there is strength, but we seem not to have learned it. Witness our weak efforts in this state in favor of a clean milk bill, and in opposition to a bill to legalize the business of an herb doctor. What we sadly need is a leadership that will mould this great medical organization of ours into a powerful engine of aggressive efficiency in legislation and in medical progress, that will protect the lives and the health of our people and bring to us their undying gratitude and unsolicited support. To conceive our medical association as such an instrument challenges the imagination and provides for envy, hatred, and malice among our members a speedy and happy death. History shows that the course of events in human affairs under a hand-picked leadership, like labor, consists of three stages: feigned enthusiasm, apathy, and rebellion. We are still in the long second stage. Legislative hearings on medical matters attract but few of the many, who by convincing and dignified argument, might save our cause from defeat and give much needed strength to our whole body. Only by an organization, working in a spirit of harmony and brotherhood, can an antiquated system that controls the entrance to the profession be abolished. This is the first step towards an honest efficiency system that will discriminate against neither Trojan nor Tyrian. Call this socialistic if you will, but it is progressive and neither fanciful nor impossible. It may involve constant experimentation with new methods of investigation and examination, but progressive aims involve the responsibility of finding progressive men and devising progressive methods.

The present agitation in favor of group medicine, so-called, deserves a word. Heralded as a reform, it is really one of the many proliferations of medical imperialism that, in our present state of organization, threaten serious danger to all. To disguise such a system with the simplicity of an eternal verity and to deceive the people by this specious cry of "Better doctors for less money," ring no more true to sound ethical principles than the screaming posters, so offensive to the eye, that advertise the fake fire sale in our cheaper stores. If many of our important medical problems are to be solved by socializing our organization, as some believe they will be, then the fate of honest and efficient medical service and the fate of the good name of the general practitioner are linked with

the fate of a medical democracy. If group medicine is to be what it now pretends to be—better medical service, and not medical panhandling—it is an important instrument for the welfare of the people, and its success will be linked in large part with the efficient supervision maintained over it by wise and impartial medical leaders. This is the secret of the success of an institution in this country that is considered a model of the group medicine idea. Time and again men have tried to copy it only to meet with absolute failure because their eyes were focussed on a vast surgical clinic with its enormous financial returns. They failed to visualize the wisdom and the strength and the courage of the leadership that made a medical democracy the foundation of a marvelous efficiency. Its financial success therefore is resultant, not causative.

Although in the abstract, group medicine may be a good thing, in the concrete, if the members of your group are incompetent or dishonest, it is worse than the condition it hopes to remedy. Like inefficient schoolhouse inspection that rouses a community and causes the people to look to the man responsible only when a fire occurs and innocent children are burned to death, so inefficient or dishonest group medicine that results in some fatal mistake may fan the flame of moral indignation and cause us too late to wake up to the inefficiency of those responsible. It is the same question that is emblazoned on the walls of every hall of medicine. Who is responsible? A little foresight, a little social imagination, will prevent many a medical calamity if we will only recognize the importance of true medical preparedness, which first means the highest possible efficiency of those to whom we entrust fundamental responsibility. Such a progressive system of administration will stimulate each individual to make himself more efficient and then it will be easy to value him according to his merit. The cry of "better doctors for less money" will cease to make us blush, for with the dead wood eliminated, only those with superior qualifications will be found in responsible places, and the general man will be the last to complain.

At present the general practitioner has a just grievance, since the supporters of this new idea, besides praising it as a bargain suggest that it supplants his incompetency. With the advent of the medical bargain, the marked-down funeral will become popularized, and between them the casket trust will be vanquished. One group of these altruists offers to send back the patient to the general practitioner with copious reports and directions for treatment, but they make no mention of ear-fare. With group medicine today there are treacherous possibilities. The layman with financial genius is given an opportunity to invade the field of medicine by establishing, forsooth, the Great Arctic and Antarctic Group Medicine Company, with offices in every city and large town. By buying cheap in the open market

quantities of group talent, he will be able to do a prosperous business on a small margin of profit. The young man just out of training will often, through financial distress, be drawn into this system and compelled to sell his skill and knowledge to the figurehead who is planted in the midst of rich mahogany. Rival firms will vie with each other in devising new ways of advertising, and medical ethics will die in the stranglehold of commercialism.

The general man's idea of efficient group medicine is consultation with—what now seems to be considered an old-fashioned institution—the learned internist. For him it is the original, most serviceable, true and tried method of seeking light in dark places. The good internist is worth a dozen groups and more. The misfortune is that there is not enough of him. The general man is always glad of his opinion, and if the surgeon and the specialist would consult with him more frequently, they would be saved from many a foolhardy venture. Never was he so much needed as he is to-day to deliver some of our specialists and surgeons of pride and covetousness and envy, and to encourage the general practitioner to stifle his bitterness and keep "his heart still pregnant with celestial fire." He it is who typifies the master mind in medicine, that ability in diagnosis acquired only by a life of ceaseless intellectual training, and that human sympathy which distinguishes only God's own gentlemen. To know him is to love him, and in the spirit of the tribute Dick Steele paid to Lady Elizabeth Hastings, "To love him is a liberal education." May the specialist soon learn to love him!

What the general man then demands is that surgeon and specialist be held up to a high standard of efficiency.—a standard at least half as high as they would require for him. Physicians, be they surgeons or specialists or general practitioners, are good or bad, honest or dishonest, cultured or not cultured, efficient or inefficient. These are the only recognized lines of social cleavage in a true medical democracy. Let us have social justice combined with old-fashioned culture and courtesy, and let us have more boosting up and less pulling down; because, in the language of a philosopher, "Intelligent self-sacrifice of the strong to the weak, makes the strong stronger and the weak more strong. To him that hath the capacity to receive shall be given the priceless boon of opportunity, and from him that hath not shall be taken away the power of degrading himself and society." The general man has had enough of gibes and insults, and "the spurns that patient merit of the unworthy takes." He is no longer a child in the go-cart. Like Ibsen's Nora, he is weary and disappointed in this doll's house that has been erected above him, and unless his brothers are willing to level it to its foundation, like Nora, too, his self-respect will compel him to leave many things that he cherishes and seek in his own way intellectual independence.

Clinical Department.

ANESTHESIA.*

By EDWARD L. YOUNG, JR., M.D., BOSTON.

DURING the time from the first introduction of ether up to within a comparatively recent date, the art of anesthesia consisted mainly in rendering a person unconscious and if possible relaxed, and that part of any operation was performed by a subordinate, often the youngest man on the team, who had a very imperfect knowledge of the work. Within recent years more and more attention has been paid to this very important part of surgery, and not only has the standard of the etherizer been very much raised, but the means at his command, in methods and sequences of drugs, been greatly increased. Both because surgeons are realizing the importance of anesthesia and because in certain methods they have an active part in that process, they are coming in closer touch with the etherizer and with the various modifications he uses. But it is not enough to have a highly trained specialist at our command; we must know enough about the effects of the drugs to know what is best for our patient in any given operation; the details of administration we can leave to the man behind the cone. We must be willing to give a reason "for the faith that is in us," and so I am going to discuss here the drugs and sequences with which I am familiar in hospital and private practice.

First to enumerate some of the effects of the drugs on the human organism. Ether is an irritant to the respiratory tract; when the lungs are normal this irritant action expends itself on the mucous membranes of the larynx, trachea and upper bronchi with the production of an abnormal amount of mucus; but not always, for in a certain small percentage of cases there are, even in normal healthy adults, pneumonias following etherization which though perhaps not entirely due to ether, certainly would not have occurred without it. And in elderly people or anyone with damaged lungs this action of ether is of the greatest importance.

Ether is an irritant to the kidneys. In any series of cases carefully studied before and after operation, the urine will show evidence of renal disturbance, indicated by albumen and casts, in from five to twenty percent. of cases where supposedly normal kidneys were present. According to Miller's work the function of the kidneys is depressed following etherization in direct proportion to the amount of ether used; the decrease going from 9.9% with small amounts of ether to 26.3% where large amounts were used.

Ether first raises and then lowers blood pressure; it likewise acts for the first half hour as a stimulant and then as a depressant. Ether very markedly diminishes phagocytosis and the

agglutinating power of the blood. Ether has no harmful effect on the heart if rightly given; it is not contraindicated where cardiac lesions are present. Ether is disagreeable to take and is apt to be followed by a considerable degree of nausea which, aside from its discomfort, is not without danger in head cases and cases of increased blood pressure from any cause. The margin of safety with ether is very wide and it comes nearest of any of the general anesthetics to being "fool proof." The immediate mortality of ether is not far from one in five thousand in this country, according to collected statistics, and according to Hewitt, one in sixteen thousand in England. The higher mortality in this country may be attributed in part, at least, to the fact that any Tom, Dick, or Harry has been considered good enough to hold the cone.

Because of its low mortality and very wide margin of safety, ether is the anesthetic of election in the majority of routine surgical cases. Preliminary medication of a hyperdermic injection of morphine and atropine helps in a quieter and more rapid induction of unconsciousness. The use of gas to put the patient to sleep and then the substitution of ether is much easier for the patient, and in so far as it lessens the stage of excitement and the amount of ether used is likewise safer. A certain amount of rebreathing is probably necessary to preserve the CO_2 balance in the blood, and whether or not we follow Yandell Henderson to his final conclusion and believe that the diminution of CO_2 in the blood, acapnia as he calls it, is the cause of shock, clinical evidence proves that patients do better who do have the optimum amount of rebreathing. This does not mean that the drop method is to be dispensed with; in fact it gives one of the reasons for the obvious advantage of most face masks, namely, that just enough rebreathing goes on and not, as in most closed cones, far too much as well as periods of too great ether concentration. As with Henderson's theories, so with Crile's, we are not obliged to follow him in all of his experimental and theoretical details and conclusions in regard to anoci-association, but the clinical facts seem beyond dispute; that when local as well as a general anesthetic is used, patients are better relaxed with less ether, there is less shock from the operation, and the post-operative course is much smoother.

Chloroform need not be discussed, as the cases in a well-equipped hospital, where a safer substitute cannot be found, are very few and far between.

Nitrous oxide gas can be used for all minor operations requiring but a very short time for their completion, and used as such, it is by far the safest anesthetic. Mixed with about eight percent. of oxygen to prevent cyanosis, gas can be used for operations of any duration in the majority of individuals. Used in this way the gas and oxygen mixture presents the following conditions:

* Read before the Fortnightly Surgical Club.

It is not irritating to the lungs or kidneys.

It has no bad effect on the heart except in so far as it causes cyanosis, in other words is poorly given or is administered to an unfit subject.

It tends to raise blood pressure slightly except at the end of long operations.

It is easy to take and recovery is quick and with few, if any, symptoms.

The margin of safety is very narrow.

The immediate mortality varies according to the skill with which it is given. In the hands of experts it has been very safe. Various men report very large numbers without a single death directly attributable to the anesthetic. But it is very easy to step out of the safety zone and in the hands of careless or inexperienced operators, the mortality, is, I believe, extremely high, far higher than any of the other anesthetics in general use. Up to the present time in Boston, I believe the mortality is well over one in a thousand. But unlike the conditions with chloroform, the dangers here are largely if not entirely avoidable, at least if we can believe the experience of certain men who use it almost exclusively. The one thing that is emphasized by these experts is the color of the patient; with the face a pink color, no accident can possibly happen, while the minute any cyanosis develops the danger zone is in sight. And this gives the clue to the limitation of the anesthetic; if the patient cannot be anesthetized satisfactorily without cyanosis, then he cannot be anesthetized safely with gas and oxygen alone. It is possible, however, to add a small amount of ether without any of the irritant effects of the drug, and yet with enough additional anesthetic effect so that the gas and oxygen need not be entirely abandoned and yet the patient kept pink. Any attempt to force the gas oxygen in the face of insufficient anesthesia and slight cyanosis, is very apt to result in increasing cyanosis and respiratory embarrassment, and if still persisted in, will result in sudden cessation of the respiration and then very quickly of the heart, both beyond the point of return. Preliminary medication is of the highest importance in securing the most satisfaction both in comfort to the patient, and especially in attaining complete anesthesia without danger. The amount of morphia varies from three doses of one-eighth of a grain at three quarter of one hour intervals, to three doses of one-sixth of a grain given in the same way. The last dose carries with it a moderate dose of atropine. The amount of morphia depends on no rule of thumb; the only thing is to give enough to have the patient distinctly drowsy when he comes to the operating room, and to do this the effect of the first and second injections must be watched and the next dose increased or decreased accordingly. The use of scopolamine is not necessary and certainly adds to the risk of anesthesia where the morphia alone just as surely decreases the risk. In fact, the morphia can well be used with any anesthetic with perfect

safety and a more satisfactory anesthesia. The use of the local anesthesia with the general, Crile's technique, is likewise of great assistance in the use of gas and oxygen as much less of the general anesthetic is necessary than where no local is used. Gas and oxygen anesthesia is indicated in all cases where there is any obvious lung irritation, or any reason to think there may be a latent lung process, as in surgical tuberculosis of any kind. In cases with severely damaged kidneys, it is likewise to be preferred. Contrary to the usual dictum, I believe it is the safest anesthetic in old men with "weak" lungs and atheromatous blood vessels, if there is also any marked kidney damage, and with increasing skill in administration, it may be the safest under any condition. At the present stage of development, it should not be used merely for comfort's sake, but only in the face of a definite indication and then only by a skilled anesthetist.

SPINAL ANESTHESIA.

This is of more limited use as it cannot safely be used above the level of the pelvis. The difficulties are in its administration and the danger lies in the spread of the drug upward along the cord, until it reaches and paralyzes important nerve roots. Clinically, this is manifested by an alarming fall in blood pressure with all the signs of serious collapse. According to Smith's work, if the origin of the dorsal sympathetics supplying the splanchnic area are hit, the danger arises. Beyond these immediate symptoms there have been no untoward late effects. The great advantage is that all stimuli to the brain are cut off and shock is much lessened. The mortality has been high, though no accurate figures are available and it needs a skilled man to administer it, and because the patient is not unconscious, psychic shock may be considerable in nervous people.

If the anesthetist gives the drug with the experimental facts of Smith's work in mind, the collapse can be almost entirely if not completely avoided, and the mortality brought within reasonable limits. The details of such an administration are as follows: The drug used is 5 per cent. novocain with adrenalin; the dose from $1\frac{1}{4}$ cc. to $1\frac{3}{4}$ cc.; the injection should be made not higher than the third lumbar interspace. The drug should be diluted with equal parts, or at most, with two parts of spinal fluid, and this mixture must be put in very slowly. The Trendelenberg position should not be used for at least ten minutes. In short, every attempt is made to localize the effect of the drug low in the canal. The patient can be either on his side or sitting up for the injection.

This is a very valuable form of anesthesia in a limited field. For cases of great vesical irritability needing cystoscopy, it is invaluable as the paralysis of the motor nerves allows of the maximum dilatation with safety as well as without sensation. In perineal prostatectomies it

can be used with perfect satisfaction to patient and surgeon. In amputations of the legs for gangrene in diabetes it is also indicated. It can of course be used for any operation coming within the field of anesthesia, but it should be reserved for those cases where a definite indication exists. Caudal anesthesia has no advantages over spinal and is more difficult to give.

LOCAL ANESTHESIA.

This form of anesthesia has gained in importance since the introduction of novocaine, which can be used in almost unlimited amounts in a one-half per cent. solution without any danger of toxic symptoms. Practically all the operations of surgery have been performed by some men, with the use of local anesthesia, and while that is not necessary or even desirable in the majority of cases, it shows what can be done. There is a definite and, as our skill increases, probably broadening class of cases in which local anesthesia is, or will, become the anesthetic of election. But here, as in spinal anesthesia, a conscious patient must be considered, and that fact alone contraindicates the use in individuals of a certain type. Considerable practice and patience are necessary to make this form of anesthesia a success. It is indicated today in all operations on the serotum or its contents, as the nerves can be easily and completely blocked, and on very minor operations. Operations on the fingers can be easily performed by blocking the nerves at the base of the finger.

To summarize: A surgeon should make every attempt to pick out for each patient on whom he operates the right anesthetic, which should be given for a definite indication.

THE TREATMENT OF PARESIS BY INTRA-VENTRICULAR INJECTIONS OF DIARSENOLIZED SERUM, WITH PRESENTATION OF CASES.

BY PHILIP COOMBS KNAPP, A.M., M.D., BOSTON.

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A FAIRLY large experience with the treatment of syphilitic affections of the central nervous system by intra-spinal injections of salvarsanized serum by the Swift-Ellis method and its modifications, begun in my service at the City Hospital by Dr. Sanborn about three years ago, has shown that in no other way have I ever obtained such constantly good results. This opinion has been reached from the study of about five hundred injections on over a hundred patients, with pretty constant benefits, with no bad ef-

fects other than a temporary increase of pain, except in one case that died suddenly soon after injection from causes not fully determined. Among these cases, of course, were a goodly number of paretics and cases of cerebral syphilis. Although many of these cerebral patients showed a very considerable improvement, I have never seen such striking benefit as in the spinal cases. I have seen tabetics, who could stand only by the support of two nurses when treatment was first begun, who after a few injections would walk several miles with an approximately normal gait. I have seen a patient, completely paraplegic, with total loss of control over the bladder and marked anesthesia, leave the hospital walking normally, with complete control of the bladder and with normal sensibility and reflexes after three injections. Such brilliant results I have not seen in cerebral cases.

My own experience is like that of most observers and has led me to accept the hypothesis that the action of salvarsan, and its substitutes—neosalvarsan and diarsenol—is most pronounced when it is exerted most directly upon the spirochaete, wherever may be its lair. I was therefore much interested to learn from Dr. Graeme Hammond of his attempts to accomplish this result and later to have a practical demonstration of the methods employed by him and Dr. Sharpe as reported by them a year ago,¹ and to see the benefits obtained in several cases which were shown me by him at the Post-graduate Hospital in New York.

Experiments seem to indicate that the cerebro-spinal fluid is subjected to some form of circulation or is not confined in a single cavity, but in separate enclosures in the cerebro-spinal canal. Not only does its physical and chemical constitution seem to differ in different parts of the cerebro-spinal axis, but if a substance be injected into it in one place it does not become gradually diffused through the whole fluid, but exerts only a local action near the point of injection, and is gradually eliminated from the fluid. Tilney,² for example, found that pigment injected into the veins was not much diffused through the cerebral cortex, and Goldmann,³ that injections into the lumbar regions of the spinal canal were not fully carried up to the cortex. Symmers⁴ went a step farther and found that solutions injected beneath the cerebral dura had much more difficulty in diffusing and were much more rapidly drained out of the cranium than if they were injected into the lateral ventricle. By any method of approach it is probable that some of the injected substance reaches the cortex, but not so fully or so completely as by the ventricular route.

Attempts have been made to obtain the action of salvarsan on the cerebral cortex in paresis by all of these routes. We are all familiar with the attempts to treat paresis by the intra-venous and intra-spinal methods, and I think that most will agree that, although our treatment is often

attended with some good results, it is not so satisfactory as is the treatment of spinal affections. Marinesco⁴ and Cotton⁵ have tried the injection of salvarsanized serum beneath the cerebral dura with considerable benefit. Hammond and Sharpe have given intra-ventricular injections to a number of patients with very considerable benefit and no bad results, one or more of their patients being able, after three injections, to return to a business which involved considerable mental application. Ballance⁶ and Forster⁷ had previously tried a similar method with fairly good results.

The operation is comparatively simple. A small trephine hole about half an inch in diameter is made just in front of the bregma and an inch to the right of the median line. The dura is then incised so as to give an opportunity to select a spot free from large cortical vessels and a blunt-pointed cannula is inserted downward and backward about six to seven centimeters into the lateral ventricle. Hammond has usually found the dura very thick and opaque, but such has not been my experience. Ten to twenty cubic centimeters of cerebro-spinal fluid is then slowly drained off and an equal amount of serum, containing .6 to .8 milligrams of salvarsan, neosalvarsan or diarsenol is allowed to flow in very slowly and gently. The wound is closed in the usual way. Subsequent injections are made directly through the scalp. Hammond does this under local anesthesia from novocaine, but I have preferred to etherize the patient again rather than run any risks. Hammond gives a second injection in two weeks and a third four weeks after the second. Neither of us has as yet seen any unpleasant results from the operation.

The first patient entered the hospital February 7. He was extremely demented and it was felt that nothing could be of much benefit. He was an Irish coal heaver of forty, barely able to read or write, who denied syphilis. For a year and a half he had been apathetic, dull, neglected his work and was careless and filthy. He was untrustworthy and uncommunicative. There was loss of sexual power. The pupils were unequal, irregular and usually did not react at all to light, although occasionally there was a very sluggish reaction. The left leg was spastic and the left knee-jerk lively, the right absent. The speech was slow and slurring, the hand-writing illegible. He was silly, apathetic and disoriented and could remember but little. He was somewhat euphoric and always felt "fine." The blood and spinal fluid gave a triple positive Wassermann reaction, the fluid showed no increase of pressure, a cell count of 25, positive globulin and a negative colloidal gold reaction.

On March 10 he was given an intraventricular injection of serum containing 0.6 mmg. of diarsenol. The ventricular fluid removed was contaminated with blood so that the usual tests could not be made, but a negative Wassermann was reported. Nine days later he was much brighter, recognized a nurse and called her by name, took more interest in what was going on, talked more clearly and

wanted to go home. The knee-jerks were lively, but unequal, and he wrote more legibly.

On March 29 the injection was repeated. The fluid removed showed a negative Wassermann, the cell count was 15, the globulin double positive, and the colloidal gold a paretic reaction. It also contained some large (plasma?) cells. After this he seemed still brighter, was interested in what was going on, talked cheerfully and more clearly, and the pupils reacted promptly. On April 3 he was discharged. Since then he has returned temporarily to his work and seems more reasonable at home.

The second patient was admitted March 2. He was a drug clerk of forty who had contracted syphilis eighteen years ago. He took medicine by the mouth for eight or nine months, and during the last two months he had had thirteen doses of diarsenol intravenously. For over a year he had complained of tremor and loss of memory, but under his recent treatment the memory had improved. The memory, however, was poor, he was a good deal disoriented, and he made many mistakes in simple calculations. There was a good deal of slurring of speech and the handwriting was characteristic. There was tremor of the tongue and hands, the reflexes were lively, and the pupils did not react to light. The blood and spinal fluid gave a triple positive Wassermann, the cell count was 84, the globulin triple positive and the colloidal gold suggestive.

He was given, March 15, 0.6 mmg. diarsenol in serum by injection into the lateral ventricle. After this he seemed considerably brighter; he did simple sums correctly, he remembered better, the tremor was less, and the pupils reacted promptly to light. On March 29 the injection was repeated, and he has continued to do well. The ventricular fluid removed at the time of the first injection showed a negative Wassermann, a cell count of 20, double positive globulin, and the colloidal gold showed the reaction of paresis. The fluid removed at the time of the second injection showed negative Wassermann, a cell count of 5, positive globulin, and a paretic reaction in the colloidal gold test.

It is too soon and our experience is too limited as yet to permit us to come to any conclusions as to the merits of this form of treatment. The operative procedure seems to be fairly safe and the risks are apparently slight. The changes in the physical signs,—the return of the knee-jerk, the reaction of the pupils to light,—are not often seen in paresis under treatment, and, taken in conjunction with the apparent general improvement encourage me to continue with this method.

In conclusion, I would express my gratitude to Drs. E. H. Nichols and G. P. Sanborn for their hearty coöperation.

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THE STATUS OF THE FEEBLE-MINDED QUESTION.

THE general interest in the question of the detection and of the disposition of the mentally defective has now assumed such large proportions that we are very likely to be led into the belief that the matter is quite a settled one, and that only the administrative parts remain to be carried out. Yet we are quite in the infancy of knowledge on this subject. We are entirely in the experimental stage. It is true that we no longer think of all mental states in terms of one amorphous mass. New divisions are continually being carved out as we differentiate one variety or one degree of mental invalidism from another. Indeed, progress thus far has been almost entirely in this direction. Until 1905, when Binet proposed his now famous scheme for determining and for separating the feeble-minded children from the normal children by comparing them with standards of

mental ability for each age, the feeble-minded question had no existence. Since this announcement the scheme and, indeed, the whole subject has aroused a tremendous interest. The momentum it has attained has, unfortunately, sucked into its path a great many unscientific persons. They expect too much of it, and overlook the vital points entirely. The Binet system is often utilized as a hard and fast rule to determine, not only the existence of mental deficiency, but also the quantity, even up to a fraction of a year. It is obvious that the mind is too flexible to allow of any such definiteness. A standard should be an aim not to be attained, otherwise progress in mental evolution will be overlooked. A scale that will determine and separate the feeble-minded from the normal, that will remove them from being impediments to the progress of the normal, and that will prevent the forcing of expensive educations on inviolated minds, must be preëminently a flexible one.

The Binet scale of measuring intelligence has undergone a great deal of modification, until now very few of the scales in use look like the original. Besides, most observers have constructed scales of their own, on the same principle but different in detail. Nearly all of them provide for a scoring method, whereby failures in problems that should be done at a certain age, and which would relegate the child to a lower mental age, are neutralized with credits for negotiating some of the problems given for a higher age. All of the methods aim to add to the range and to the adaptability of the questions, so that there will be more flexibility in their application. The very numbers of the modifications themselves demonstrated that none of them is everywhere applicable. Some of the tests are too easy, others too hard, still others too few, from which to make an intelligent determination. Many of the tests are merely hobbies of individual examiners. The more tests the more confusion there is. Furthermore, the Binet tests and their modifications were originally intended for children of one school type. They are not quite so applicable to the mixtures found in American schools. They have less applicability to children above school age. It is difficult to construct a Binet scale for the later years because the range of knowledge keeps ever widening.

Moreover, the difficulty of constructing a suitable measuring scale is further complicated

by the fact that only in the profoundly backward are all the faculties retarded. These hardly need a Binet scale to determine this question. There are higher grades of defectives rising to the normal, and even above, in whom the retardation is only partial, in one or more faculties; and in the others they may even excel. These children must be recognized, and their normal faculties brought out and perhaps measured. The practical and applied psychologist can aid in this work with his laboratory. Unless this is appreciated, such children may be relegated into the class of the unfit because they fail in some of the tests for their age, when in fact they may be geniuses in some special faculty. The later measuring scale methods aim at this very question. Whether material, physical or mental, true economy lies in picking out the good parts of a mass, no matter how small it is. Nothing good must be wasted merely because it is buried in the bad. This takes time. One sitting with a stereotyped measuring sheet, perhaps in the hands of the inexperienced, is not sufficient to make so important a determination.

On the other hand, it is important that some system, standardized periodically, and sufficiently flexible, be constructed in order that the many surveys undertaken should have some uniformity of principle, and in order that results can be read and interpreted alike everywhere. Those interested vitally in this problem, whether they are mental hygienists, health officials, school physicians, criminologists, or the like, ought to agree on a selection of the best of the many methods and plans already submitted, or the adoption of new ones. In this way would a vastly important question be on the high road to solution.

THE TIME ELEMENT IN SURGERY.

WHILE few can sympathize with the mental attitude of the surgeon who works with one eye on the clock, as the saying is, it has probably been the experience of all to see valuable minutes going to waste in the operating room while waiting for preparations which should have been made before the first drop of anesthetic was given. But let the surgeon who

rails against such delays take heed lest he himself is unwittingly the offender. A little over-cautiousness in making diagnosis, too much manipulation of gut, a too meticulous technic, or a failure to cultivate ambidextrousness may turn the balance between life and death.

In the *British Medical Journal* for April 15, Dr. R. P. Rowlands calls attention to these dangers. He believes that the time used in employing a needle-holder is, as a rule, wasted time, and he pleads for simplification of the technic in every possible way, deploring the modern tendency to over-refinement of method. Rowlands does not think that the surgeon should take time during an operation to explain its steps to an onlooker, but rather wait until all is over.

In the May 6 issue of the same periodical Dr. Edward Harrison corroborates his colleague's remarks, and goes into some detail as to time-saving methods. He thinks perfection of co-operation among the hospital staff may accomplish wonders in this way, and recommends frequent drilling of the operating-room force. He suggests that surgeons take a course in sewing from some female relative to improve their speed and accuracy; another hint is the acquirement of the art of tying a knot with one hand. The self-threading needle and the round-pointed knife he speaks of as valuable time-saving adjuncts, and takes up the opening and closing of the abdomen for an appendectomy to illustrate the points.

It would be well for American surgeons, who as a whole are probably the speediest in the world, to exchange time-saving ideas; for even those which the metropolitan surgeon regards as the most inconsiderable may be valuable to surgeons in remote districts who are unable to attend large clinics, and who do not operate often enough to evolve them for themselves.

A NEW BUILDING FOR THE MASSACHUSETTS COLLEGE OF PHARMACY.

THE Massachusetts College of Pharmacy is actively planning for a new building, to be erected on the fine site purchased a few years ago at the corner of Brookline and Longwood Avenues, Boston, very near the new buildings

of the Harvard Medical School, and in the great center of medical education and practice that is being developed in this part of Boston. The building, as shown, is to be of an impressive character, that will add much in the eyes of the general public to the dignity of the profession of pharmacy.



This College is in possession of an endowment amounting to \$240,000, but no part of the principal of this fund is to be used. The new building with its equipment, exclusive of its site, will cost in the neighborhood of \$200,000, of which a part is to be obtained by the sale of the present building and its site, and a part is being raised by a campaign now under way.

Dr. Frank Piper, chairman of the ways and means committee, announced at a recent meeting of his committee that he had received a gift of \$50,000 on condition that an amount sufficient to construct the building was secured. He also stated that the friend who made this large donation, while desiring to remain incognito for the present, had by his generosity practically assured the early beginning of work upon the new building.

MEDICAL ASPECTS OF THE MEXICAN SITUATION.

THE great European War has now lasted for nearly two years, and to the ordinary perception there is no immediate indication of its ending. Though many persons feel, or at least express, confidence in the manner of its termination, to impartial observers its outcome still seems as much as ever on the knees of the gods. Naturally, as members of a dispassionate pro-

fession and citizens of a neutral country, American physicians, whatever their personal sympathies, have been largely interested in the medical aspects of the great war. For this reason, the JOURNAL will continue, during the coming season, the publication of its column of European War notes, in which items of interest from this point of view will be presented from week to week.

The United States is now menaced, more acutely than at any time since April, 1914, with the incidence of a second Mexican War, which at the present writing seems likely of declaration within a short time. In the several states throughout the Union during the past week, the militia, or national guard, has been mobilized, with the demonstration of varying degrees of efficiency and preparedness. A number of these militia units have already been dispatched to the Mexican frontier. Whether or not this mobilization proves to be the precursor of actual war, the Mexican situation is not only of intense concern to all Americans, but in its medical aspects affords to the American profession matter of import for action, as well as observation. The occasion and opportunity have arrived when the medical corps of the army and navy, the medical officers of the national guard, and, in the event of extensive hostilities, civilian members of the profession will either demonstrate or fail to demonstrate their fitness to deal competently and creditably with the medical urgencies that arise in time of war; and it is most earnestly to be hoped and expected that this demonstration will be in every respect a credit to the American profession.

In its present issue the JOURNAL begins the publication of a column of Mexican notes dealing, after the analogy of the European War notes, with topics of medical concern connected with the Mexican situation. In another column of this issue of the JOURNAL is published also the recent announcement of the American Red Cross in connection with its activities in preparation for a possible Mexican War. Unlike law, medicine speaks with an even stronger and more authoritative voice in times of war than in times of peace; and in Mexico, as well as in Europe, the work of our profession will be not only to succor the injured, but to maintain the standards and purposes of civilization through the inevitable barbarisms of war.

MEDICAL NOTES.

AMERICAN MEDICAL ASSOCIATION.—At the recent annual meeting of the American Medical Association, Dr. William J. Mayo of Rochester, Minn., was elected president in succession to Dr. Rupert Blue.

ROYAL SOCIETY OF CANADA.—Dr. A. B. Macallum, professor of physiology at the University of Toronto, has been elected president of the Royal Society of Canada.

NATIONAL ECLECTIC MEDICAL ASSOCIATION.—The annual meeting of the National Eclectic Medical Association was held at Cedar Point, Ohio, on June 23. Dr. W. E. Daniel, of Madison, S.D., was elected president for the ensuing year. The next convention is to be held at Nashville, Tenn., in 1917.

POLIOMYELITIS IN BROOKLYN.—According to the figures compiled by the Department of Health, there are now 114 verified cases of infantile paralysis in Brooklyn, practically all of them in the old South Brooklyn section. Eight cases were reported from Manhattan so far this month. The outbreak appears to be confined to infants and young children, less than 10% of the cases occurring in children over five years of age. While some of the cases recently reported are really old cases, whose onsets date from May, others are of recent development; the latest onset thus far reported is June 19. It was natural to suppose that the schools had a share in spreading the disease, but at the Department of Health it was stated that a careful investigation had failed to substantiate this view. It was pointed out that over 90% of the children were under school age; that the cases were not limited or even more prevalent in any one school district, and that they were not at all limited to children in the same classroom. Because of the relation alleged to exist between poliomyelitis and the stable fly, a survey has been made to determine whether the cases thus far reported are at all in the vicinity of stables. This part of the investigation is still in progress. In the mean time, the Sanitary Bureau is taking special pains to see that the manure in all of the stables in the affected districts is properly disposed of to prevent the breeding of flies. One case was reported to the Department from Staten Island. It is rather interesting to note that this case, like most of the Brooklyn cases, is also in an Italian district.

According to a bulletin issued by the Department of Health, thirty-seven additional cases of infantile paralysis were reported to the Department of Health on June 26, making a total to date of 183 cases in Brooklyn. A study of the situation indicates that the disease is spreading in a southerly direction and is invading the Parkville section, to the east of Bay Ridge. Of all the cases thus far reported, none of the pa-

tients are over eight years of age. There was a rumor current that the Department of Health planned to close the schools, but this was denied by Health Department officials.

From the figures compiled by the Department of Health, it appears that during the past week 12 deaths were reported from anterior poliomyelitis (infantile paralysis) in the Greater City. Eleven of these deaths occurred in the Borough of Brooklyn, almost as many as occurred in the entire city during the year 1915, when 13 deaths from this disease were reported for the entire year in the Greater City. There was nothing else noteworthy in the mortality from the other causes during the week.

There were 1311 deaths reported from all causes, as compared with 1277 reported during the corresponding week of last year, the respective rates being 12.24 and 12.22, a difference of 0.2 in the weekly rate, equivalent to an increase of only 2 deaths. The mortality of the contagious diseases, other than infantile paralysis, was lower during the past week than during the corresponding week last year. There was an appreciable decrease in the mortality from pulmonary tuberculosis, which, however, was to some extent offset by an increase in the deaths reported from the other tuberculosis diseases. The mortality of the degenerative diseases was heavier during the past week than during the week ending June 26, 1915. The inclement weather last week resulted in an increase in the number of deaths from bronchitis.

The death rate for the first 26 weeks of 1916 was 14.82, as compared with 15.10 for the first half of 1915.

In response to a call issued by Commissioner Emerson, a conference of experts was held at the Health Department on June 28 to discuss plans for the control of infantile paralysis in Brooklyn. With 23 new cases reported June 28, the total in Brooklyn during the present outbreak, has already amounted to 206 cases. At the conference it was decided to organize a special field force in Brooklyn under Dr. Simon Blatteis of the Department's Bureau of Preventable Diseases. Assisting Dr. Blatteis will be a special staff of medical inspectors, sanitary inspectors, nurses, and sanitary police, who will visit all cases daily and see that strict quarantine is maintained. Hereafter all the premises where a case of infantile paralysis exists will be placarded. The Department of Health has prepared a special pavilion at its Kingston Avenue Hospital where sufferers from infantile paralysis will be cared for by skilled specialists. The Department is organizing a special visiting staff of experts, including specialists in children's diseases, orthopedists and neurologists, who will assist the regular attending staff in caring for the little patients. Wherever complete isolation and proper nursing cannot be maintained in the homes, patients ill with infantile paralysis will be removed to the Health

Department's special pavilion just mentioned. The Health Department insists that a patient, in order to be allowed to remain at home, should have a separate room, separate toilet, a special person in attendance for nursing purposes, and facilities for the proper disposal of all discharges. Where these facilities cannot be provided, the Health Department will remove the patient to its hospital, where these and many other special facilities will be provided free of charge and where the best obtainable medical talent will be in attendance. The Department calls attention to the importance of general cleanliness in all communicable diseases. In infantile paralysis, not only should there be the highest possible degree of cleanliness in the home, but careful attention should also be paid to the proper disposal of all discharges from the patient, both nasal and bowel. The Department will see that all the infected homes are supplied with effective means of disinfecting both the personal clothing and household effects, with a view to limiting the spread of infection to others. A special meeting of experts was also held at the Department of Health on Friday afternoon at 2.30, and on Saturday, July 1, at 2 p.m., a meeting of Brooklyn physicians, living in the area affected by the present epidemic, was held at the Polhemus Memorial Clinic under the joint auspices of the Department of Health and the special Poliomyelitis Committee. On July 1, 53 new cases and 12 deaths of poliomyelitis were reported in New York, making a total of 59 deaths since the outbreak of the epidemic.

LONDON DEATH RATES IN APRIL.—Statistics recently published show that the total death rate of London in April, 1916, was 17.2 per thousand inhabitants living. Among the several districts and boroughs, the highest rate was 25, in Shoreditch, a populous East Side slum, and the lowest was 12.3, in Hampstead, a more open suburb on the north.

BRITISH HONORS FOR PHYSICIANS.—The British birthday honors, recently announced, contain the names of several notable physicians. Dr. Christopher Addison, M.P., formerly lecturer in anatomy at the medical schools of Charing Cross and St. Bartholomew's Hospital, is appointed a privy councillor, and the honor of knighthood is conferred on Mr. Francis Mark Farmer, dental surgeon to the London Hospital, on Dr. Armand Marc Ruffer, president of the sanitary maritime and foreign council of Egypt, and on Dr. Nestor Tirard. Dr. Tirard is professor of the principles and practice of medicine in King's College, and senior physician to King's College Hospital and commandant of the Third London General Hospital. As secretary of the pharmaceutical committee of the general medical council, he has been for twenty years medical editor of the *British Pharmacopoeia*.

MEDICAL SURVEY OF BRAZIL.—The Rockefeller Foundation last winter sent to Brazil to make a general medical survey of the southern part of that country, an international health commission, consisting of Dr. Richard M. Pearce of the University of Pennsylvania, Dr. Bailey K. Ashford, U. S. A., and Dr. John A. Ferrell. This commission has recently returned to the United States after spending in Brazil a period of about four months, devoted to a study of the Brazilian general education system, medical schools, hospitals, dispensaries and public health organization.

EUROPEAN WAR NOTES.

SURGICAL UNIT TO THE CENTRAL POWERS.—The American Physicians' Expeditions Committee has recently sent from New York the sixth surgical unit which it has dispatched during the course of the war to the Central Powers. This unit consists of six physicians and six nurses under command of Dr. Joseph I. Eastman of Indianapolis, professor of surgery at the University of Indiana. This expedition sailed from New York for Rotterdam aboard the S. S. *Ryndam*. Its destination is Austria.

THE SANITARY REHABILITATION OF EAST PRUSSIA.—In the issue of the *British Medical Journal* for June 10, is published an editorial account of the recently issued report of Professor Kirehner in behalf of the commission of which he was a member, which was sent to East Prussia after the first Russian invasion and again after the second. This report describes particularly the effect of these invasions upon the country and the methods by which the sanitary rehabilitation of the province was effected.

"On August 20, 1914, the population was notified that the province must be evacuated. Many thousands streamed away and were cared for by the war organizations. Between August 26 and 28, Hindenburg's victory temporarily eased the pressure of the Russian armies, and the civil medical administration was set the task of restoring order to the ravaged province. Professor Kirehner found the conditions less serious than he expected. Alarmist rumors had spread through the press to the effect that at the battle of Tannenberg thousands of Russians had perished in the Masurian lakes. It was feared that all the drowned men and horses would poison the province. But, as a matter of fact, the lakes are far from Tannenberg, and no foundation for these rumors could be discovered. On the whole, there was little disorganization from the sanitary point of view. The dead had been properly buried, and even on the battlefields there was little trace of the recent past. The wells were in good condition, and the land was again being plowed. The sum of 20,000 marks was provided for the care of infants and the tuberculous; temporary hospitals were run up in place of those that had

been destroyed; 200 beds, with bedding, were supplied in a few days by the Red Cross; and the requisite number of doctors and chemists was also provided. But in October fresh Russian forces swept over the border, and the province had again to be evacuated. This time the Russians stayed longer, and devastated the country more thoroughly. When Professor Kirchner and his Commission returned to the province after the second Russian retreat, the country was ruined. It was estimated that 300 million marks would be required to restore the 36,000 houses which had been burnt. Russian prisoners were employed by the thousand in gangs of thirty to forty for three months. Trenches were filled up, wells were cleaned, and hospitals and other most necessary buildings were restored. The graves of the fallen were also attended to. By July, 1915, some 75% of the inhabitants had returned, but for lack of housing accommodation a considerable degree of overcrowding was unavoidable."

BRITISH MEDICAL CASUALTIES IN THE BATTLE OF JUTLAND.—It is officially announced that in the great naval battle of Jutland on May 31 and June 1, a total of twenty-three medical officers were lost among the killed. These included the fleet surgeons of the *Queen Mary*, the *Invincible*, the *Indefatigable*, the *Defence* and the *Black Prince*.

DIRECTORY OF WAR RELIEF FUNDS.—In response to recent inquiry, we are publishing herewith a brief directory of the more important American relief funds for the European War, with the address to which in each instance money contributions should be sent:

AMERICAN AMBULANCE HOSPITAL. Mrs. E. D. Brandergee, 82 Devonshire St., Boston.
 AMERICAN FUND FOR FRENCH WOUNDED. Kidder, Peabody & Co., 115 Devonshire St., Boston.
 AMERICAN RED CROSS, MASSACHUSETTS BRANCH. Mr. F. L. Higginson, Jr., 44 State St., Boston.
 ARMENIAN RELIEF FUND. Mr. Henry D. Forbes, National Shawmut Bank, Boston.
 BELGIAN RELIEF FUND. Mr. J. H. O'Neill, Federal Trust Co., 85 Devonshire St., Boston.
 BRITISH IMPERIAL RELIEF FUND. Mr. Charles H. McIntyre, 18 Tremont St., Boston.
 CANADIAN RELIEF FUND. Mrs. Lydia G. Raymond, 500 Boylston St., Boston.
 EAST PRUSSIAN RELIEF FUND. Mr. L. M. Bartels, 99 Nassau St., New York, N. Y.
 FRENCH ORPHANAGE FUND. Mr. Allen Forbes, State Street Trust Co., Boston.
 GERMAN RELIEF FUND. Dr. Rudolph Hertz, 32 India St., Boston.
 ITALIAN RELIEF FUND. Mr. William R. Thayer, 304 Boylston St., Boston.
 LAFAYETTE FUND. Old Colony Trust Co., Boston, Mass.
 NATIONAL ALLIED RELIEF FUND. Lee, Higginson & Co., 44 State St., Boston.
 PRINCE OF WALES RELIEF FUND. Mr. R. M. Stuart Wortley, 25 Broad St., New York, N. Y.
 POLISH RELIEF FUND. Mr. W. P. Blake, 27 Kilby St., Boston.
 RUSSIAN RELIEF FUND. Mrs. Curtis Guild, 124 Marlborough St., Boston.
 SERBIAN DISTRESS FUND. 555 Boylston St., Boston.
 ALLIES' TOBACCO FUND. Bartlett Brothers & Co., 60 State St., Boston.

BELGIAN SOLDIERS' TOBACCO FUND. Bartlett Brothers & Co., 60 State St., Boston.

WAR RELIEF FUNDS.—On July 1 the totals of the principal New England relief funds for the European War reached the following amounts:

Massachusetts Red Cross	\$146,390.67
Belgian Fund	129,491.33
French Wounded Fund	90,655.29
Army Huts Fund	59,715.60
French Orphanage Fund	56,705.83
Polish Fund	38,203.72
Surgical Dressings Fund	36,964.87
Facial Hospital Fund	22,925.55

MEXICAN NOTES.

PREVENTION OF TYPHUS INFECTION IN MEXICO.—Perhaps the most immediate and important problem in connection with the Mexican situation, is to prevent the introduction of typhus infection, which is more or less endemic in Mexico, not only among the United States troops, but into the country at large through Mexican refugees who are now crossing the frontier in large numbers. The United States Public Health Service has already taken measures to secure this end and rigorous examination of all such persons will be made at stations along the boundary. With reference to maritime travel, the following orders have been issued to officers on duty at all United States quarantine stations.

"The following provisions will apply to vessels from Mexico arriving at a port of the United States south of the southern boundary of Maryland during the close quarantine season:

"1. Vessels from Progreso, Tuxpam, or Frontera, that have discharged or loaded cargo at sea and have not been alongside a wharf, have had no crew ashore, and carry no passengers, may be passed without fumigation or detention of crew or vessel, provided all are well upon arrival and the above provisions have been certified to by an accredited medical officer of the United States.

"2. Vessels from all other Mexican ports, and those from Progreso, Tuxpam, or Frontera that have not complied with the foregoing requirements shall be treated according to the provisions of paragraph 105, Service Regulations.

"Vessels from Colombia, Venezuela, or any other port of South America or the West Indies suspected of being infected with yellow fever shall be treated according to paragraph 105, Service Regulations."

RED CROSS ACTIVITIES.—In conjunction with the mobilization of the National Guard and the imminence of impending war in Mexico, the American Red Cross and its branches have undertaken immediate activities to discharge their duties in the field. On June 19, the United States Military Relief Committee of the New York Red Cross, meeting in New York City,

completed arrangements for the immediate dispatch of four Red Cross hospital units to the Mexican border. These units are already organized and will have a capacity of caring for 2,000 patients. For the immediate financing of these units \$100,000 are needed, of which \$89,000 have already been raised. Volunteers are available for the immediate formation of two more units, if needed. Over 600 nurses are enrolled and available for service.

Report from Washington on May 21 states that the National Red Cross is prepared to equip field units sufficient to do hospital service for an army of 100,000 men and will soon increase its capacity so that it could care for 250,000. Its chief deficiency at present is in field equipment.

SURGICAL SUPPLIES FOR MEXICO.—The preparation of surgical supplies for use by the United States Army and National Guard in Mexico has been undertaken by the surgical dressings committee of the National Civics Federation. In addition to its headquarters at the Peter Bent Brigham Hospital, subsidiary work rooms will be established elsewhere throughout the country and invitations have been extended to women to volunteer for work in the preparation of supplies.

DENTISTRY FOR MASSACHUSETTS NATIONAL GUARD.—The importance of sound teeth in the general health and efficiency of the soldier has been abundantly demonstrated in the present European War. In observance of this lesson therefore, steps were immediately taken upon the mobilization of the Massachusetts National Guard to inspect the teeth of soldiers in the troops prior to their acceptance for active service. This work was voluntarily undertaken by the staff of the Forsyth Dental Infirmary, of the Tufts Dental School, and of the Dental Clinic of the Carney Hospital. During the early days of mobilization, soldiers were sent from the camp at Framingham to the Forsyth Infirmary for treatment, which consisted chiefly in extraction, filling, and cleaning. Later this work was continued at Framingham by a large number of dentists from the above institutions, who went to the camp and devoted entire days to the work, while the physicians of the medical corps were engaged in the physical examination of recruits, the re-examination of enlisted men prior to their acceptance for Federal service, and the administration of smallpox vaccination and anti-typhoid inoculation. As a result, the Massachusetts troops, whose departure for the front is already under way, will be sent into the field in creditable physical condition; and particular praise is due, not only to the regularly appointed medical officers, but to the dental surgeons who thus volunteered their services for the welfare of the Massachusetts troops and for the credit of the profession.

CASE OF TYPHOID FEVER IN FRAMINGHAM.—The vigilance of Massachusetts medical officers

is evident by the discovery and prompt quarantine of one case of typhoid fever among the troops assembled in camp at Framingham. Sixteen other patients with minor diseases were detained in the camp hospital.

NEW HAMPSHIRE HOSPITAL CORPS.—Report from Concord, N. H., states that on June 22, the Adjutant General of that state was authorized to organize a field hospital corps for the fifth division of the National Guard. This corps will be immediately recruited and will be located at Manchester, N. H. It will consist of sixty-seven men in command of the major, captain and other officers. The field hospital which this corps will maintain will consist of 216 beds.

DEFICIENCIES OF THE MEDICAL SERVICE.—The recent mobilization of the National Guard, though on the whole creditable throughout the country, has revealed deficiencies in the medical service as well as in other branches of the organization. One of these is the insufficient number of surgeons allowed to each regiment. On a war footing of 1600 men, each regiment has but four surgeons, who, under conditions of field service in war, are obviously insufficient. In all foreign countries the allowed ratio is seven surgeons to 1000 men.

Another great deficiency of the medical service is its lack of organized sanitary units. Many states in the Union have no field hospitals or ambulance companies. The entire organized militia of the United States, which has a strength on paper of 120,000, possesses only twenty-eight field hospitals and only eighteen ambulance companies, and these organizations muster 852 commissioned officers and 4000 enlisted men. The states which are entirely lacking in these essential units are Alabama, Arizona, Arkansas, Delaware, Florida, Georgia, Kansas, Mississippi, Montana, New Mexico, North Dakota, Oregon, Utah, and West Virginia. At camps of instruction for sanitary bodies recently held under the auspices of the United States Army, 8000 officers and men from the entire country were in attendance. Of these, 304 were from Pennsylvania and 292 were from Massachusetts.

BOSTON AND NEW ENGLAND.

THE WEEK'S DEATH RATE IN BOSTON.—During the week ending July 1, 1916, there were 214 deaths reported, with a rate of 14.68 per 1,000 population, as compared with 158 and a rate of 11.01 for the corresponding week of last year. There were 37 deaths under 1 year, as compared with 18 last year, and 62 deaths over 60 years of age, against 49 last year.

During the week the number of cases of principal reportable diseases were: diphtheria, 41; scarlet fever, 21; measles, 226; whooping cough, 24; typhoid fever, 7; tuberculosis, 66.

Included in the above were the following

cases of non-residents: diphtheria, 7; scarlet fever, 1; measles, 2; tuberculosis, 4.

Total deaths from these diseases were: diphtheria, 4; scarlet fever, 1; measles, 4; typhoid fever, 1; tuberculosis, 17.

Included in the above were the following deaths of non-residents: diphtheria, 2; scarlet fever, 1; tuberculosis, 2.

Massachusetts Medical Society.

ESSEX NORTH DISTRICT SOCIETY.—At the annual meeting of Essex North District Medical Society, on May 5, 1916, it was voted that the Society instruct its councilors to urge the council of the Massachusetts Medical Society to use every legitimate means to procure an amendment to the Workmen's Compensation Act which will give the insured freedom of choice of medical attendance."

J. FORREST BURNHAM, *Secretary*.

99 Bradford St., Lawrence, Mass.

Miscellany.

THE PAY CONSULTATION CLINIC AT THE MASSACHUSETTS GENERAL HOSPITAL.

Two reasons led to the establishment of the Pay Consultation Clinic which was opened at the Massachusetts General Hospital on January 25, 1916.

One was the desire to make the facilities and staff of a large general hospital available to the practitioner in his care of patients of moderate means. The other was to enable this group of patients to obtain the benefits of a complete range of skilled advice and expensive equipment, at a fee within their reach.

It is intended that both the family physician and his patient shall be benefited. If not accompanied by the doctor, the patient is required to bring a letter from him, which is a guarantee that the person to be admitted belongs in the group for which this clinic is intended. Experience with the eight hundred patients so far received, shows that the family physician is making legitimate use of the opportunity. Two or three patients outside of those "of moderate means" have been noted, but it is expected that even this small number will be reduced by the consideration of the doctor who asks for a diagnosis and advice.

After a sufficient number of visits have been made for the clinic physician to establish a diagnosis, a letter is sent to the family doctor summing up the opinions of the consultants, together with the evidence given by the X-Ray Department and laboratories.

The treatment that seems advisable to the consultant is suggested to the patient's physician. The patient is not treated, and after the diagnosis is made, he does not return except at the request of the family doctor.

Many cases have required the combined investigation of several specialists. The neurologist and roentgenologist are needed to reinforce the opinion of the internist, or the ophthalmologist and neurologist confirm the diagnosis of the surgeon in a cerebral case.

Each of the New England states has contributed its interesting and difficult cases to the total of over eight hundred patients, so far seen in the clinic. Instances of the value of combined opinions are easily given. A case of severe anemia required the combined observation, each from his own angle, of the physician, surgeon, roentgenologist, and technician to locate the cause as a bleeding ulcer of the rectum which had given no localizing or suggestive symptoms. Another example might be cited of a patient with indefinite signs, which were finally brought to a focus by the x-rays of the chest. In another case, the catheterizing of the ureters, with the bacteriological report and guinea-pig findings localized a final diagnosis as a tubercular right kidney.

The clinic seems to be a concrete expression of thoughts that have existed in the minds of some of the more progressive men in and outside of the profession of medicine.

Before the Consultation Clinic was established, the opinions of one hundred representative physicians and surgeons in and around Boston were ascertained regarding such a step. The sixty replies received endorsed the idea without exception.

Recently, fifty-nine replies have been received from letters sent to physicians who have sent cases to the clinic. One has considered it a failure; fifty-eight have found it of great help and expressed their appreciation of it, and ten of this number have made some minor suggestions by which the clinic could be made of still greater assistance to them.

ALGERNON COOLIDGE,
RICHARD C. CABOT,
DAVID L. EDSALL,
CHARLES L. SCUDDER,
CHARLES A. PORTER,
FREDERIC A. WASHBURN, *Secretary*,
General Executive Committee.

AMERICAN RED CROSS PREPARATIONS.

COL. JEFFERSON R. KEAN, Medical Corps, U.S.A., as Director General of Military Relief for the American Red Cross, made the following statement on June 25:—

"The most important work which has probably ever been undertaken by the American Red

Cross for the assistance of the Medical Service of the army, is now being done in the organization of base hospital units from the personnel of the larger civil hospitals in this country. These base hospitals, which embrace much of the best professional talent in the country, are intended to be transported on the outbreak of war to the seat of military operations, where they are located at the city which is selected to be the military base. One of these is needed for each 20,000 men brought into service. They receive the sick and wounded coming from the field hospitals at the front, and in them the wounded soldier in his journey to the rear first finds a comfortable bed and trained nurses. Thirteen base hospitals with skilled personnel are now organized and seven more are in process of organization.

"Each base hospital is equipped to receive 500 patients. Although organized by the Red Cross, they are not administered by it, but when called into active service, pass under the exclusive authority of the War Department and become a part of its medical service. The medical officers are given military commissions in the Reserve Corps, and receive volunteer commissions when called into active service. The nurses, in the same way, belong to the Red Cross nursing service, and in time of war become a part of the army nurse corps.

"The organization in time of peace of these large and complex units will place at the disposal of the government immediately on the outbreak of war organizations which it would require many weeks to create and equip, and offers our soldiers from the first the finest medical talent in the country. The following are the locations of these hospitals and the heads of their various services:

"*Presbyterian Hospital*, New York City.—Director and Chief of Surgical Service, Dr. George E. Brewer; Principal Assistant, Dr. Alfred Stillman; Chief of Medical Service, Dr. Warfield T. Longcope; Chief of Laboratory Service, Dr. Karl M. Vogel; Chief Nurse, Miss Anna C. Maxwell.

"*Mount Sinai Hospital*, New York City.—Director, Dr. N. E. Brill; Chief of Surgical Service, Dr. Howard Lilienthal; Chief of Medical Service, Dr. R. Weil; Chief of Laboratory Service, Dr. George Baehr; Chief Nurse, Miss Elizabeth A. Greener.

"*Bellevue Hospital*, New York City.—Director and Chief of Surgical Service, Dr. George David Stewart; Chief of Medical Service, Dr. Van Horne Norrie; Chief of Laboratory Service, Dr. Charles Norris; Chief Nurse, Miss Clara D. Noyes.

"*New York Hospital*, New York City.—Director and Chief of Surgical Service, Dr. Charles L. Gibson; Chief of Medical Service, Dr. Lewis A. Conner; Chief of Laboratory Service, Dr. William J. Elser; Chief Nurse, Miss M. H. Jordan.

"*New York Post-Graduate Hospital*, New York City.—Director, Dr. Samuel Lloyd; Chief

of Surgical Service, Dr. Edward W. Peterson; Chief of Medical Service, Dr. Arthur F. Chace; Chief of Laboratory Service, Dr. Ward J. MacNeal; Chief Nurse, Miss Amy Patmore.

"*Brooklyn, N. Y. For Navy*.—Director and Chief of Surgical Service, Dr. W. B. Brinsmade; Chief of Medical Service, Dr. Luther F. Warren; Chief of Laboratory Service, Dr. Robert F. Barber; Chief Nurse, Miss Frances van Ingen.

"*Massachusetts General Hospital*, Boston, Mass.—Director, Dr. Frederic A. Washburn; Chief of Surgical Service, Dr. George W. W. Brewster; Chief of Medical Service, Dr. Richard C. Cabot; Chief of Laboratory Service, Dr. J. Homer Wright; Chief Nurse, Miss Sara E. Parsons.

"*Boston City Hospital*, Boston, Mass.—Director, Dr. J. J. Dowling; Chief of Surgical Service, Dr. Edward H. Nichols; Chief of Medical Service, Dr. John Jenks Thomas; Chief of Laboratory Service, Dr. Ariel W. George; Chief Nurse, Miss Emma M. Nichols.

"*Harvard University*, Boston, Mass.—Director and Chief of Surgical Service, Dr. Harvey Cushing; Chief of Medical Service, Dr. Roger L. Lee; Chief of Laboratory Service, Dr. Richard P. Strong; Chief Nurse, Miss Carrie M. Hall.

"*Lakeside Hospital*, Cleveland, O.—Director, Dr. George W. Crile; Chief of Surgical Service, Dr. W. E. Lower; Chief of Medical Service, Dr. C. F. Hoover; Chief of Laboratory Service, Dr. H. T. Karsner; Chief Nurse, Miss Grace Allison.

"*Rochester, N. Y.*—Director, Dr. John M. Swan; Chief of Surgical Service, Dr. C. W. Hennington; Chief of Medical Service, Dr. William V. Ewers; Chief of Laboratory Service, Dr. C. C. Sutter; Chief Nurse, Miss Emma Jones; Assistant, Miss Jessica Heal.

"*Johns Hopkins Hospital*, Baltimore, Md.—Director, Dr. Winford Smith; Chief of Surgical Service, Dr. J. M. T. Finney; Chief of Medical Service, Dr. T. C. Janeway; Chief of Laboratory Service, Dr. T. R. Boggs; Chief Nurse, Miss Bessie E. Baker.

"*Harner Hospital*, Detroit, Mich.—Director, Dr. Angus McLean; Chief of Surgical Service, Dr. C. D. Brooks; Chief of Medical Service, Dr. B. R. Shurly; Chief of Laboratory Service, Dr. P. M. Hickey; Chief Nurse, Miss Emily McLaughlin."

The generosity of Mr. Irving T. Bush, of the Bush Terminal, Brooklyn, who for the past two years has given spacious warehouse room to the American Red Cross for the storing, boxing and shipping of European war relief supplies, has again been splendidly manifested, for he has relieved the embarrassment of the Red Cross in regard to space for storing the equipment of the five base hospitals now being organized in New York in behalf of our army and navy, by offering storage room for three of these units at the Bush Terminal. This large space is in addition to the fine storehouse which Mr. Bush has furnished the Red Cross as a depot for its European supplies.